13.0 NON-WATER QUALITY IMPACTS

Sections 304(b) and 306 of the Clean Water Act require EPA to consider non-water quality environmental impacts (including energy requirements) associated with effluent limitations guidelines and standards. To comply with these requirements, EPA considered the potential impact of the proposed MP&M rule on energy consumption, air emissions, and solid waste generation. A discussion of the proposed technology options is given in Section 14 of this document.

Considering energy use and environmental impacts across all media, the Agency has determined that the impacts identified in this section are justified by the benefits associated with compliance with the proposed limitations and standards.

Section 13.1 discusses the energy requirements for implementing wastewater treatment technologies at MP&M facilities. Section 13.2 presents the impact of the proposed technologies on air emissions, and section 13.3 discusses the impact on wastewater treatment sludge and waste oil generation.

13.1 Energy Requirements

EPA estimates that compliance with this rule will result in a net increase in energy consumption at MP&M facilities. Table 13-1 presents estimates of energy usage by technology option.

Table 13-1

Energy Usage by Option

Option	Incremental Energy Required[a] (10^6 kilowatt hrs/yr)
Basic Technology (Options 1, 5, and 9)	181
Basic Technology with Water Conservation and Pollution Prevention (Options 2, 6, and 10)	208
Advanced Technology (Options 3 and 7)	1,747
Advanced Technology with Water Conservation and Pollution Prevention (Options 4 and 8)	1,736
Selected Option for Existing Sources[b] (Options 2, 6, and 10 with flow cutoffs)	116

Source: MP&M Design and Cost Model output.

[a] The amount of additional energy required (from baseline) if the technology option is implemented, summed for all regulated facilities.

[b] The Selected Option for Existing Sources regulates fewer MP&M facilities than other options shown in the table due to flow cutoffs (see Section 14).

For the Basic Technology option, EPA found that options with pollution prevention and water conservation practices (Options 2, 6, 10) may use slightly more additional energy as compared to those without pollution prevention and water conservation (Options 1, 5, 9). This may be due to the number of facilities that have the Basic Technology option treatment in place prior to the regulation (leading to a smaller incremental energy requirement) compared to the number of facilities that have pollution prevention and water conservation in place prior to the regulation (leading to a higher incremental energy requirement). Note that the reverse is true for the Advanced Technology option. However, the Advanced Technology option (with or without pollution prevention) consumes much more additional energy than the basic option.

The Advanced Technology options (3/7 and 4/8) include ultrafiltration and microfiltration technologies which require significant amounts of energy in comparison to the oil/water separators and clarifiers required for Basic Technology options (1/5/9 and 2/6/10). The Selected Option for Existing Sources requires the least amount of additional energy consumption because fewer MP&M facilities will be affected than other options shown in the table due to proposed flow cutoffs. (See Section 14 for a discussion of flow cutoffs).

Approximately 3,123 billion kilowatt hours of electric power were generated in the United States in 1997 (1). Additional energy requirements to implement EPA's proposed option correspond to approximately 0.01 percent of the national requirements. The increase in energy requirements due to the implementation of MP&M technologies will in turn cause an air emissions impact from the electric power generation facilities providing the additional energy. EPA expects the increase in air emissions to be minimal as it is proportional to the increase in energy requirements, or approximately 0.01 percent.

13.2 Air Emissions Impacts

The Agency believes that the in-process and end-of-pipe technologies included in the technology options for this rule do not generate significant air emissions.

EPA is developing National Emission Standards for Hazardous Air Pollutants (NESHAPs) under Section 112 of the Clean Air Act (CAA) to address air emissions of the hazardous air pollutants (HAPs) listed in Title III of the CAA Amendments of 1990 (CAAA). Below is a list of current and upcoming NESHAPs that may potentially affect HAP-emitting activities at MP&M sites:

- Chromium Emissions from Hard and Decorative Chromium Electroplating and Chromium Anodizing Tanks - Proposed December 16, 1993 and promulgated on January 25, 1995;

- Halogenated Solvent Cleaning - Proposed November 29, 1993 and promulgated on December 2, 1994;

- Aerospace Manufacturing - Proposed June 6, 1994 and promulgated on July 31, 1995;
- Shipbuilding and Ship Repair (Surface Coating);
- Large Appliances (Surface Coating);
- Metal Furniture (Surface Coating);
- Automobile and Light-Duty Truck Manufacturing (Surface Coating); and
- Miscellaneous Metal Parts and Products (Surface Coating) - scheduled for promulgation on November 15, 2000.

These NESHAPs define the maximum achievable control technology (MACT) for emissions of HAPS. Like effluent guidelines, MACT standards are technology-based. The CAAA set maximum control requirements on which MACT can be based for new and existing sources.

Halogenated HAP solvents (e.g., methylene chloride, perchloroethylene, trichloroethylene, 1,1,1-trichloroethane, carbon tetrachloride, and chloroform) used for cleaning in the MP&M industry can be a source of hazardous air emissions. EPA believes the proposed MP&M rule will not affect the use of solvents containing halogenated hazardous air pollutants in the MP&M industry. This rule neither requires nor discourages the use of aqueous cleaners in lieu of halogenated hazardous air pollutant solvents.

13.3 Solid Waste Generation

Solid waste generated at MP&M sites includes hazardous and nonhazardous wastewater treatment sludge as well as waste oil removed in wastewater treatment. EPA estimates that compliance with this proposed rule will result in a decrease in wastewater treatment sludge and an increase in waste oil generated at MP&M facilities. Sections 13.3.1 and 13.3.2 discuss the impacts of the proposed rule on the generation of wastewater treatment sludge and waste oil, respectively.

13.3.1 Wastewater Treatment Sludge

Based on EPA's detailed questionnaires (see Section 3.0), the Agency estimates that MP&M facilities generated 267 million gallons of wastewater treatment sludge in 1996. EPA estimates that implementing the proposed wastewater treatment technology options (which incorporate water conservation and pollution prevention practices) will reduce sludge generation. Table 13-2 presents the amount of wastewater treatment sludge expected to be reduced as a result of implementing each of the technology options.

Table 13-2

Wastewater Treatment Sludge by Option

Option	Reduction in Sludge Generated[a] (million gal/yr)
Basic Technology (Options 1, 5, and 9)	62.9
Basic Technology with Water Conservation and Pollution Prevention (Options 2, 6, and 10)	63.6
Advanced Technology (Options 3 and 7)	62.8
Advanced Technology with Water Conservation and Pollution Prevention (Options 4 and 8)	62.9
Selected Option for Existing Sources[b] (Options 2, 6, and 10 with flow cutoffs)	61.1

Source: MP&M Design and Cost Model output
[a]Reduction in the amount of sludge generated (from baseline) if the technology option is implemented, summed for all regulated facilities.
[b]The Selected Option for Existing Sources regulates fewer MP&M facilities than other options shown in the table due to flow cutoffs (see Section 14).

As shown in Table 13-2, wastewater treatment sludge generation decreases with implementation of the wastewater treatment technology options. These options include sludge dewatering, which decreases sludge generation at sites that have chemical precipitation and settling technologies without sludge dewatering in place at baseline. EPA did not estimate sludge reduction at sites that already practice sludge dewatering.

The water conservation and pollution prevention technologies result in a greater sludge reduction. EPA expects these technologies to reduce sludge generation for the following reasons:

- Water conservation technologies reduce the amount of source water used and thus mass of metals in the source water entering the unit processes at a site (e.g., calcium, sodium), which reduces the amount of sludge generated during metals removal.

- Recycling of coolants and paint curtain wastewater reduces the mass of metal pollutants in treatment system influent streams, which reduces the amount of sludge generated during metals removal.

- Bath maintenance practices, including good operational practices regarding drag-out in plating processes, reduce the mass of metal pollutants in treatment system influent streams, which in turn reduces the amount of sludge generated during metals removal.

EPA classifies many sludges generated at MP&M facilities as either listed or characteristic hazardous wastes under the Resource Conservation and Recovery Act (RCRA) as follows:

- EPA classifies the sludge resulting from electroplating operations as EPA hazardous waste code F006 (40 CFR 261.31). If the facility mixes the wastewater from these electroplating operations with other nonelectroplating wastewater for treatment, EPA still considers all of the sludge generated from the treatment of this commingled waste stream to be a listed hazardous waste F006; or

- If the sludge or waste oil from wastewater treatment exceeds the standards for the Toxicity Characteristic (i.e, is hazardous), or exhibits other RCRA-defined hazardous characteristics (e.g., reactive, corrosive, or flammable), EPA considers it a characteristic hazardous waste (40 CFR 261.24).

EPA does not include chemical conversion coating, electroless plating, and printed circuit board manufacturing under the F006 listing (51 FR 43351, December 2, 1986). If the facility performs certain chemical conversion coating operations on aluminum, EPA classifies the resulting sludge as EPA hazardous waste number F019.

State and local regulations may also define MP&M sludges as hazardous wastes. Facilities should check with the applicable authorized authority to determine if other regulations apply.

Based on information collected during site visits and sampling episodes, the Agency believes that some of the solid waste generated at MP&M facilities would not be classified as hazardous. However, for the purpose of compliance cost estimation, the Agency assumed that all solid waste generated as a result of implementing the proposed technology options would be hazardous.

13.3.2 Waste Oil

Based on the Agency's detailed questionnaire, EPA estimates that MP&M facilities generated 805 million gallons of waste oil in 1996. Table 13-3 presents the amount of additional waste oil expected to be removed as a result of implementing each of the technology options.

Table 13-3

Waste Oil Removed by Option

Option	Incremental Waste Oil Removed[a] (million gal/yr)
Basic Technology (Options 1, 5, and 9)	1,350
Basic Technology with Water Conservation and Pollution Prevention (Options 2, 6, and 10)	944
Advanced Technology (Options 3 and 7)	597
Advanced Technology with Water Conservation and Pollution Prevention (Options 4 and 8)	585
Selected Option for Existing Sources[b] (Options 2, 6, and 10 with flow cutoffs)	841

Source: MP&M Design and Cost Model output.
[a]The amount of additional oil removed (from baseline) if the technology option is implemented, summed for all regulated facilities.
[b]The Selected Option for Existing Sources regulates fewer MP&M facilities than other options shown in the table due to flow cutoffs (see Section 14).

The removal of oil from MP&M wastewater prior to discharge to POTWs or surface waters results in an increase in waste oil generation from baseline to the proposed options. MP&M facilities usually either recycle waste oil on or off site, or contract haul it for disposal as either a hazardous or nonhazardous waste. The increase in waste oil generation reflects better removal of oil from the wastewater, and does not reflect an increase in overall oil use at MP&M facilities. For the purpose of compliance cost estimation, EPA assumed that all waste oil was contract hauled for disposal; however, EPA expects that some of the waste oil can be recycled either on or off site.

The decrease in waste oil removed from Options (1/5/9) to Options (2/6/10) is due to the 80 percent reduction of coolant discharge using the recycling technology included in the Options (2/6/10) technology trains. This system recovers and recycles oil-bearing machining coolants at the source, reducing the generation of spent coolant and extending the useful life of the coolant. The decrease in waste oil removed from Options (2/6/10) to the Selected Option for Existing Sources is due to the decrease in the number of regulated MP&M facilities as a result of the proposed flow cutoffs. (See Section 14 for discussion of flow cutoffs).

13.4 References

1. The Energy Information Administration. Electric Power Annual 1998 Volume 1, Table A1, 1998.

14.0 EFFLUENT LIMITATIONS AND STANDARDS

This section presents the proposed MP&M effluent limitations guidelines and standards for each regulatory level of control required by the Clean Water Act (CWA) and discusses the technology options. Section 1.0 discusses these levels of control. The proposed limitations and standards are based on the technologies included in Options 2, 4, 6 and 10, as discussed in Section 9.0. Except for the Steel Forming and Finishing Subcategory, the proposed MP&M effluent limitations guidelines and standards consist of concentration-based limitations for all new and existing direct and indirect dischargers within the scope of the proposed rule. The proposed MP&M effluent limitations guidelines and standards for the Steel Forming and Finishing Subcategory consist of mass-based limitations for all new and existing direct and indirect dischargers. In this Section, EPA provides its rationale for proposing different levels for the low flow exclusion for indirect dischargers in various subcategories. Direct dischargers are sites that discharge wastewater to a surface water. Indirect dischargers are sites that discharge wastewater to a publicly owned treatment works (POTW).

Sections 14.1 through 14. 7 discuss EPA's rationale for selecting the proposed option and summarizes the effluent limitations and standards for each of the regulatory levels of control for each subcategory. The Statistical Support Document for the Proposed Effluent Limitations Guidelines and Standards for the Metal Products & Machinery Industry [EPA-821-B-00-006] contains detailed information on those facilities EPA used in calculating the proposed BPT limitations and establishes the statistical methodology for developing numerical discharge limitations. Section 10.0 of this document summarizes EPA's methodology for calculating effluent limits, Section 9.0 discusses in detail all of the MP&M technology options, and Sections 11.0 and 12.0 discuss costs and loads, respectively.

14.1 Best Practicable Control Technology Currently Available (BPT)

EPA defines BPT effluent limits for conventional, toxic (priority), and non-conventional pollutants for direct discharging facilities. In specifying BPT, EPA looks at a number of factors. EPA first considers the cost of achieving effluent reductions in relation to the effluent reduction benefits. The Agency also considers the age of the equipment and facilities, the processes employed and any required process changes, engineering aspects of the control technologies, non-water quality environmental impacts (including energy requirements), and such other factors as the Agency deems appropriate (CWA 304(b)(1)(B)). Traditionally, EPA establishes BPT effluent limitations based on the average of the best performances of facilities within the industry of various ages, sizes, processes, or other common characteristics. Where existing performance is uniformly inadequate, EPA may require higher levels of control than are currently in place in an industrial category if the Agency determines that the technology can be practically applied. See "A Legislative History of the Federal Water Pollution Control Act Amendments of 1972," U.S. Senate Committee of Public Works, Serial No. 93-1, January 1973, p. 1468.

In addition, CWA Section 304(b)(1)(B) requires a cost-reasonableness assessment for BPT limitations. In determining the BPT limits, EPA must consider the total cost of treatment technologies in relation to the effluent reduction benefits achieved. This inquiry does not limit EPA's broad discretion to adopt BPT limitations that are achievable with available technology unless the required additional reductions are "wholly out of proportion to the costs of achieving such marginal level of reduction." See Legislative History, op. cit. p. 170. Moreover, the inquiry does not require the Agency to quantify benefits in monetary terms. See, for example, American Iron and Steel Institute v. EPA, 526 F. 2d 1027 (3rd Cir., 1975). For the BPT cost-reasonableness assessment, EPA used the total pounds of chemical oxygen demand (COD) removed for the General Metals, Metal Finishing Job Shops, Non-Chromium Anodizing, Steel Forming and Finishing, Oily Wastes, and Railroad Line Maintenance subcategories because this parameter best represented the pollutant removals without counting removals of individual pollutants more than once. EPA used oil and grease for the cost-reasonableness assessment for the Shipbuilding Dry Dock Subcategory because it best represented the pollutant removals for this subcategory without counting removals of individual pollutants more than once.

In balancing costs against the benefits of effluent reduction, EPA considers the volume and nature of expected discharges after application of BPT, the general environmental effects of pollutants, and the cost and economic impacts of the required level of pollution control. In past effluent limitations guidelines and standards, BPT cost-reasonableness has ranged from $0.94/lb removed to $34.34/lb removed in 1996 dollars. In developing guidelines, the CWA does not require or permit consideration of water quality problems attributable to particular point sources, or water quality improvements in particular bodies of water. Therefore, EPA did not consider these factors in developing the proposed MP&M limitations. See Weyerhaeuser Company v. Costle, 590 F. 2d 1011 (D.C. Cir. 1978).

Table 14-1 summarizes the pounds of pollutants removed for direct dischargers, and Table 14-2 summarizes the costs, costs per pound removed, and economic impacts for direct dischargers associated with each of the proposed options by subcategory. (See Section 14.4 for summary tables for indirect dischargers.)

EPA notes that the pounds removed presented in Table 14-1 may differ from the pounds removed presented in the Economic, Environmental, and Benefits Analysis of the Proposed Metal Products & Machinery Rule [EPA-821-B-00-0058]. This document presents the methodology employed to assess economic and environmental impacts of the proposed rule and the results of the analysis. The difference in pounds removed occurs because the Agency does not include facilities (or the associated pollutant loadings and removals) that closed at the baseline (i.e., EPA predicted that these facilities would close prior to the implementation of the MP&M rule) when performing certain economic analyses (e.g., cost-effectiveness). Table 14-1 estimates the annual pounds removed by the selected option for all of the direct discharging facilities in EPA's questionnaire database that discharged wastewater at the time EPA collected the data.

Table 14-1

Pounds of Pollutants Removed by the Proposed BPT Option for Direct Dischargers by Subcategory

Subcategory [a] (Number of Facilities)	Selected Option	Total Suspended Solids (lbs removed/yr)	Oil and Grease (lbs removed/yr)	Chemical Oxygen Demand (lbs removed/yr)	Priority and Nonconventional Metals (lbs removed/yr)	Priority and Nonconventional Organics (lbs removed/yr)	Cyanide (lbs removed/yr)
General Metals (3,794)	Option 2	10.1 million	7.8 million	181 million	4 million	5 million	184,000
Metal Finishing Job Shops (15)[b]	Option 2	13,000	14,400	232,000	34,000	4,600	5,700
Printed Wiring Boards (11)[b]	Option 2	51,000	238,000	1.3 million	172,000	22,000	1,400
Steel Forming and Finishing (43)	Option 2	884,000	101,000	4.5 million	387,000	76,000	1,100
Oily Wastes (911)	Option 6	349,000	885,000	5.1 million	81,000	127,000	10
Railroad Line Maintenance (34)	Option 10	9,000	47,400	59,000	1,000	78	0
Shipbuilding Dry Dock (6)	Option 10	650	8.5 million	0	1,400	700	0

[a] EPA did not identify any direct discharging facilities in the Non-Chromium Anodizing Subcategory; therefore, there are no estimated removals. See Section 14.1.3.

[b] Although EPA is not revising limits for TSS and O&G for these two subcategories, removals are reported based on incidental removals for the proposed MP&M Option 2 technology for BPT control of toxic and nonconventional pollutants.

Table 14-2

Annualized Costs and Economic Impacts of the Proposed BPT Option for Direct Dischargers by Subcategory

Subcategory [a] (Number of Facilities)	Selected Option	Annualized Compliance Costs for Selected Option ($1996)	Economic Impacts (Facility Closures) of Selected Option (Percentage of Regulated Subcategory)	BPT Cost per Pound Removed [b] (1996 $/pound removed)
General Metals (3,794)	Option 2	230 million	20 (<1%)	1.22
Metal Finishing Job Shops (15)	Option 2	1.3 million	0	5.60
Printed Wiring Boards (11)	Option 2	2.5 million	0	1.92
Steel Forming and Finishing (43)	Option 2	29.3 million	0	6.51
Oily Wastes (911)	Option 6	11.2 million	0	2.18
Railroad Line Maintenance (34)	Option 10	1.18 million	0	20.00
Shipbuilding Dry Dock (6)	Option 10	2.15 million	0	0.25

[a] EPA did not identify any direct discharging facilities in the Non-Chromium Anodizing Subcategory; therefore, there are no estimated costs. See Section 14.1.3 for estimates based on a model facility.

[b] EPA based the pounds used in calculating the BPT cost reasonableness on the COD removals only (shown in Table 14-1) for each subcategory, except for the use of oil and grease removals only (shown in Table 14-1) for the Shipbuilding Dry Dock Subcategory.

14.1.1 BPT Technology Selection for General Metals Subcategory

Section 6.2.1 describes the General Metals Subcategory. The Agency estimates that there are approximately 3,800 direct discharging facilities in the General Metals Subcategory. EPA estimates that the direct discharging facilities in the General Metals Subcategory currently discharge substantial quantities of pollutants into the surface waters of the United States, including 8.2 million pounds per year of oil and grease, 10.9 million pounds per year of total suspended solids (TSS), 187 million pounds of COD, 5.2 million pounds per year of priority and nonconventional metal pollutants, 5.2 million pounds of priority and nonconventional organic pollutants, and 187,000 pounds per year of cyanide. As a result of the quantity of pollutants currently discharged directly to the nation's waters by General Metals facilities, EPA determined that there was a need for BPT regulation for this subcategory.

Facilities in the General Metals Subcategory generally perform unit operations such as cleaning, etching, electroplating, electroless plating, and conversion coating that produce metal-bearing wastewater. In addition, some of these facilities also perform machining and grinding, impact deformation, and surface preparation operations that generate oily wastewater. Therefore, EPA considered technology options 1 through 4 for this subcategory because technologies included in these options treat both oily wastewater and metal-bearing wastewater. As explained above, EPA only discusses options 2 and 4 in detail in this section since these options costed less and removed more pollutants than options 1 and 3, respectively. See Section 9.0 for a discussion of technology options.

The Agency selected Option 2 as the basis for BPT regulation for the General Metals Subcategory. EPA's decision to base BPT limitations on Option 2 treatment reflects primarily two factors: (1) the degree of effluent reductions attainable, and (2) the total cost of the proposed treatment technologies in relation to the effluent reductions achieved. EPA found no basis for identifying different BPT limitations based on age, size, process, or other engineering factors. Neither the age nor the size of a facility in the General Metals Subcategory will directly affect the treatability of MP&M process wastewater. For facilities in this subcategory, the most pertinent factors for establishing the limitations are costs of treatment and the level of effluent reductions obtainable.

Tables 14-1 and 14-2 present the annual pollutant removals for direct dischargers for Option 2 and the cost per pound removed using only the pounds of COD removed, respectively. EPA estimates that implementation of Option 2 will cost $1.22 per pound of COD removed (1996 dollars). The Agency has concluded that the costs of BPT Option 2 are achievable and are reasonable as compared to the removals achieved by this option.

The technology proposed in Option 2 represents the average of the best performing facilities due to the prevalence of chemical precipitation followed by sedimentation in this subcategory. Approximately 22 percent of the direct discharging facilities in the General Metals Subcategory employ chemical precipitation followed by a clarifier (Option 2), while less than 1 percent employ microfiltration after chemical precipitation (Option 4).

Based on the available database, Option 4 only removes, on an annual basis, an additional 66,000 pounds of TSS, 12,300 pounds of oil and grease, 15,000 pounds of priority metals, and 880,000 pounds of nonconventional metals, while removing 324,000 pounds less COD and 31,000 pounds less priority and nonconventional organic pollutants than Option 2. Although there is a large amount of additional removals of TSS and nonconventional metals for Option 4 when considered across the entire population (3,800 facilities), the Agency determined that these additional removals were not significant when considered on a per-facility basis. In addition, Option 4's annualized cost is $52 million more than Option 2. EPA concluded that the lack of significant additional pollutant removals per facility achieved by Option 4 (and the fact that it removes less COD and organic pollutants) support the selection of Option 2 as the BPT technology basis. Table 14-3 lists the proposed BPT limitations for existing point sources in the General Metal Subcategory. EPA's data editing procedures and statistical methodology for calculating BPT limitations are explained in Section 10.0.

Existing direct discharging facilities in the General Metals Subcategory must achieve the following effluent limitations representing the application of BPT. Discharges must remain within the pH range 6 to 9 and must not exceed the following.

Table 14-3

BPT/BAT Effluent Limitations for the General Metals Subcategory

Regulated Parameter		Maximum Daily (mg/L (ppm))	Maximum Monthly Avg. (mg/L (ppm))
1.	Total Suspended Solids (TSS)	34	18
2.	Oil and Grease (as HEM)	15	12
3.	Total Organic Carbon (TOC) (as indicator)	87	50
4.	Total Organics Parameter (TOP)	9.0	4.3
5.	Cadmium	0.14	0.09
6.	Chromium	0.25	0.14
7.	Copper	0.55	0.28
8.	Total Cyanide	0.21	0.13
9.	Amenable Cyanide	0.14	0.07
10.	Lead	0.04	0.03
11.	Manganese	0.13	0.09
12.	Molybdenum	0.79	0.49
13.	Nickel	0.50	0.31
14.	Silver	0.22	0.09
15.	Sulfide, Total	31	13
16.	Tin	1.4	0.67
17.	Zinc	0.38	0.22

As explained in Section 15.2.7, upon agreement with the permitting authority, facilities with cyanide treatment have the option of achieving the limitation for either total or amenable cyanide. Additionally, upon agreement with the permitting authority, facilities must choose to monitor for TOP or TOC, or implement a management plan for organic chemicals as specified in Section 15.2.7.

14.1.2 BPT Technology Selection for Metal Finishing Job Shops Subcategory

Section 6.2.2 describes the Metal Finishing Job Shops Subcategory. The Agency estimates that there are approximately 15 direct discharging facilities in the Metal Finishing Job Shops Subcategory. EPA previously promulgated BPT and best available technology economically achievable (BAT) limitations for all of the facilities in this subcategory at 40 CFR Part 413 (Electroplating Pretreatment Standards) and at 40 CFR Part 433 (Metal Finishing Effluent Limitations Guidelines and Pretreatment Standards). However, EPA developed the existing regulations applicable to the facilities in the Metal Finishing Job Shops Subcategory approximately 20 years ago, and since that time, advances in electroplating and metal finishing

processes, water conservation, pollution prevention, and wastewater treatment have occurred. EPA is proposing new BPT effluent limitations guidelines for this subcategory.

EPA estimates that direct discharging facilities in the Metal Finishing Job Shops Subcategory currently discharge substantial quantities of pollutants to the surface waters of the United States, including 17,900 pounds per year of oil and grease, 20,500 pounds per year of TSS, 287,400 pounds per year of COD, 44,000 pounds per year of priority and nonconventional metal pollutants, 6,000 pounds per year of priority and nonconventional organic pollutants, and 6,000 pounds per year of cyanide. As a result of the quantity of pollutants currently discharged directly to the nation's waters by metal finishing job shop facilities, EPA determined that there is a need for BPT regulation for this subcategory.

Facilities in the Metal Finishing Job Shops Subcategory generally perform unit operations such as cleaning, etching, electroplating, electroless plating, passivating, and conversion coating that produce metal-bearing wastewater. In addition, some of these facilities also perform machining and grinding, impact deformation, and surface preparation operations that generate oily wastewater. Therefore, EPA considered technology options 1 through 4 for this subcategory because technologies included in these options treat both oily wastewater as well as metal-bearing wastewater. As explained above, EPA only discusses Options 2 and 4 in detail in this section since these options costed less and removed more pollutants than Options 1 and 3, respectively.

The Agency selected Option 2 as the basis for BPT regulation for the Metal Finishing Job Shops Subcategory. The new BPT limitations incorporate more stringent effluent requirements for priority metals, nonconventional pollutants, cyanide, and organic pollutants (by way of an indicator parameter) as compared to the limitations contained in 40 CFR 433.13. EPA has included the conventional pollutants, TSS and oil and grease, in the new BPT regulation for this subcategory at the same level as 40 CFR 433.13. EPA's decision to base BPT limitations on Option 2 treatment reflects primarily two factors: (1) the degree of effluent reductions attainable and (2) the total cost of the proposed treatment technologies in relation to the effluent reductions achieved. No basis could be found for identifying different BPT limitations based on age, size, process, or other engineering factors. Neither the age nor the size of a facility in the Metal Finishing Job Shops Subcategory will directly affect the treatability of MP&M process wastewater. For facilities in this subcategory, the most pertinent factors for establishing the limitations are costs of treatment and the level of effluent reductions obtainable. EPA based its decision not to revise the conventional pollutant limitations on the use of the alternate organics control parameters (i.e., TOC or TOP) and the small additional removals of TSS obtainable after the incidental removal due to control of the metals.

Table 14-1 presents the annual pollutant removals for direct dischargers for Option 2; Table 14-2 presents the cost per pound removed using only the pounds of COD removed. EPA estimates that implementation of Option 2 will cost $5.60 per pound of COD removed (1996 dollars). The Agency has concluded that the costs of BPT Option 2 are achievable and are reasonable as compared to the removals achieved by this option.

The technology proposed in Option 2 represents the average of the best performing facilities due to the prevalence of chemical precipitation followed by sedimentation in the subcategory. The Agency estimates that 100 percent of the direct discharging facilities in the Metal Finishing Job Shops Subcategory employ chemical precipitation followed by a clarifier (Option 2) while no facilities employ microfiltration after chemical precipitation (Option 4). Because no facilities in this subcategory employ microfiltration after chemical precipitation for solids separation, the Agency concluded that Option 4 does not represent the average of the best treatment.

Based on the available data base, Option 4 only removes, on an annual basis, an additional 6,900 pounds of priority and nonconventional metals, while removing 1,500 pounds less COD, and 600 pounds less priority and nonconventional organic pollutants than Option 2. EPA concluded that the lack of significant overall additional pollutant removals achieved by Option 4 (and the fact that it removes less COD and organic pollutants) support the selection of Option 2 as the BPT technology basis. Table 14-4 lists the proposed BPT limitations for the Metal Finishing Job Shops Subcategory.

EPA's data editing procedures and statistical methodology for calculating BPT limitations are explained in Section 10.0. In general, EPA calculated the new BPT limitations for this subcategory using data from facilities in the Metal Finishing Job Shops Subcategory employing Option 2 technology. As discussed above, EPA did not calculate new limitations for TSS or oil and grease for this subcategory. Instead, EPA set them at the same level as in the Metal Finishing effluent guidelines (40 CFR 433.13). For cyanide limitations, EPA used data from all subcategories where cyanide destruction systems were sampled. If data was not sufficient for developing BPT limitations for an individual pollutant in this subcategory, the Agency transferred data from another subcategory.

Existing direct discharging facilities in the Metal Finishing Job Shops Subcategory must achieve the following effluent limitations representing the application of BPT. Discharges must remain within the pH range 6 to 9 and must not exceed the following.

Table 14-4

BPT/BAT Effluent Limitations for the Metal Finishing Job Shops Subcategory

Regulated Parameter		Maximum Daily (mg/L (ppm))	Maximum Monthly Avg. (mg/L (ppm))
1.	Total Suspended Solids (TSS)	60	31
2.	Oil and Grease (as HEM)	52	26
3.	Total Organic Carbon (TOC) (as indicator)	78	59
4.	Total Organics Parameter (TOP)	9.0	4.3
5.	Cadmium	0.21	0.09
6.	Chromium	1.3	0.55
7.	Copper	1.3	0.57
8.	Total Cyanide	0.21	0.13
9.	Amenable Cyanide	0.14	0.07
10.	Lead	0.12	0.09
11.	Manganese	0.25	0.10
12.	Molybdenum	0.79	0.49
13.	Nickel	1.5	0.64
14.	Silver	0.15	0.06
15.	Sulfide, Total	31	13
16.	Tin	1.8	1.4
17.	Zinc	0.35	0.17

As explained in Section 15.2.7, upon agreement with the permitting authority, facilities with cyanide treatment have the option of achieving the limitation for either total or amenable cyanide. Additionally, upon agreement with the permitting authority, facilities must choose to monitor for TOP or TOC, or implement a management plan for organic chemicals as specified in Section 15.2.7.

14.1.3 BPT Technology Selection for Non-Chromium Anodizing Subcategory

Section 6.2.3 describes the Non-Chromium Anodizing Subcategory. EPA's survey of the MP&M industry did not identify any non-chromium anodizing facilities discharging directly to surface waters. All of the non-chromium anodizing facilities in EPA's data base are either indirect or zero dischargers. EPA consequently could not evaluate any treatment systems in place at direct discharging non-chromium anodizing facilities for establishing BPT limitations. Therefore, EPA relied on technology transfer based on information

and data from indirect discharging facilities in the Non-Chromium Anodizing Subcategory. The Agency concluded that the technology in place at some indirect discharging non-chromium anodizing facilities is appropriate to use as the basis for regulation of direct dischargers because the pollutant profile of the wastewater generated at those facilities discharging directly would be similar in character to that from indirect discharging non-chromium anodizing facilities and the model technologies in place at indirect dischargers are effective in treating the conventional pollutants that are generally not regulated in pretreatment standards.

EPA previously promulgated BPT and BAT limitations for all of the facilities in this subcategory at 40 CFR Part 433 (Metal Finishing Effluent Limitations Guidelines and Pretreatment Standards). However, EPA developed the regulations applicable to this subcategory approximately 20 years ago, and since that time, advances in anodizing processes, water conservation, pollution prevention, and wastewater treatment have occurred. EPA is proposing to set new BPT effluent limitations guidelines for this subcategory for metals, but is not revising the limitations for conventional pollutants (TSS and oil and grease). EPA based its decision not to revise the limitations for conventional pollutants on the small additional removals attainable after the incidental removal due to control of the metals.

In addition, the current regulations in 40 CFR Part 433 require non-chromium anodizing facilities to meet effluent limitations for seven metal pollutants. EPA's data show that these seven metals are present only in very small quantities in the current discharges at non-chromium anodizing facilities. Under the Metal Finishing effluent guidelines, EPA did not establish a BPT limit for aluminum, the metal found in the largest quantity in non-chromium anodizing facilities wastewater. The Agency has determined that direct discharging facilities in the Non-Chromium Anodizing Subcategory should have a limit for aluminum and thus is proposing to replace BPT in 40 CFR Part 433 with new MP&M effluent limitations that more appropriately reflect the pollutants found in non-chromium anodizing wastewater. EPA notes that the Agency expects a reduction in monitoring burden associated with this revision for direct discharge non-chromium anodizing facilities.

Facilities in the Non-Chromium Anodizing Subcategory generally perform unit operations such as cleaning, etching, and anodizing of aluminum that produce metal-bearing wastewater. The majority of the metal found in anodizing wastewater is aluminum. In addition, some of these facilities also perform machining and grinding, impact deformation, and surface preparation operations that generate oily wastewater. Therefore, EPA considered technology options 1 through 4 for this subcategory because technologies included in these options treat both oily wastewater as well as metal-bearing wastewater. As explained above, EPA only discusses Options 2 and 4 in detail in this section since these options costed less and removed more pollutants than Options 1 and 3, respectively.

The Agency selected Option 2 as the basis for BPT regulation for the Non-Chromium Anodizing Subcategory. Although EPA did not identify any existing non-chromium anodizing facilities from the detailed survey, EPA estimated the cost of treatment and pollutant removal for a median-sized direct discharging facility with a wastewater flow of 6.25 million

gallons per year, based on the characteristics of a similarly sized indirect discharging non-chromium anodizing facility. Because direct dischargers are more likely to have treatment in place, EPA provided the model facility with treatment in place equivalent to Option 1. Therefore, at the model direct discharging non-chromium anodizing facility, EPA estimates that implementation of Option 2 will cost $0.83 per pound of COD removed (1996 dollars), and has found that cost to be reasonable. EPA estimates that Option 2 would remove 25,700 pounds of pollutants per median-sized facility per year (including 9,200 pounds of TSS and 1,240 pounds of aluminum as incidental removals based on the control of metals).

Additionally, because solids separation by microfiltration is not used by any non-chromium anodizing facilities, the Agency concluded that Option 4 does not represent BPT for this subcategory. Table 14-5 lists the proposed BPT limitations for the Non-Chromium Anodizing Subcategory.

EPA's data editing procedures and statistical methodology for calculating BPT limitations are explained in Section 10.0. Because EPA's survey did not identify any direct dischargers in the Non-Chromium Anodizing Subcategory, EPA used data from indirect discharging facilities to develop the BPT limitations. The Agency identified two indirect discharging facilities in this subcategory that achieved very good pollutant reductions (including, on average, 96 percent reduction of aluminum and incidental removals of 95 percent for TSS). Therefore, EPA determined that the data from these facilities were appropriate for the development of BPT limitations. If data was not sufficient for developing BPT limitations for an individual pollutant in this subcategory, the Agency transferred data from another subcategory. In the case of TSS and oil and grease, EPA used the limitations in 40 CFR 433.13. The Statistical Development Document contains detailed information on which facilities EPA used in calculating the proposed BPT limitations.

Existing direct discharging facilities in the Non-Chromium Anodizing Subcategory must achieve the following effluent limitations representing the application of BPT. Discharges must remain within the pH range 6 to 9 and must not exceed the following.

Table 14-5

BPT/BAT Effluent Limitations for the Non-Chromium Anodizing Subcategory

Regulated Parameter		Maximum Daily (mg/L (ppm))	Maximum Monthly Avg. (mg/L (ppm))
1.	Total Suspended Solids (TSS)	60	31
2.	Oil and Grease (as HEM)	52	26
3.	Aluminum	8.2	4.0
4.	Manganese	0.13	0.09
5.	Nickel	0.50	0.31
6.	Zinc	0.38	0.22

14.1.4 BPT Technology Selection for Printed Wiring Board Subcategory

Section 6.2.4 describes the Printed Wiring Board Subcategory. The Agency estimates there are approximately 11 direct discharging facilities in this subcategory. EPA has previously promulgated BPT and BAT limitations for all of the facilities in this subcategory at 40 CFR Part 433 (Metal Finishing). However, EPA developed the regulations applicable to this subcategory approximately 20 years ago, and since that time, advances in printed wiring board manufacturing processes, water conservation practices, pollution prevention techniques, and wastewater treatment have occurred. EPA is proposing to set new BPT effluent limitations guidelines for this subcategory.

EPA estimates that direct discharging facilities in the Printed Wiring Board Subcategory currently discharge substantial quantities of pollutants to the surface waters of the United States, including 262,000 pounds per year of oil and grease, 100,000 pounds per year of TSS, 1.7 million pounds per year of COD, 242,000 pounds per year of priority and nonconventional metal pollutants, 35,000 pounds per year of priority and nonconventional organic pollutants, and 1,600 pounds per year of cyanide. As a result of the quantity of pollutant currently discharged directly to the nation's waters by printed wiring board facilities, EPA determined that there is a need for BPT regulation for this subcategory.

Facilities in the Printed Wiring Board Subcategory generally perform unit operations such as cleaning, etching, masking, electroplating, electroless plating, applying, developing and stripping of photoresist, and tin/lead soldering that produce metal-bearing and organic-bearing wastewater. Therefore, EPA considered technology Options 1 through 4 for this subcategory. As explained above, EPA only discusses Options 2 and 4 in detail in this document since these options costed less and removed more pollutants than Options 1 and 3, respectively. Section 9.0 describes the technology options.

The Agency selected Option 2 as the basis for BPT regulation for the Printed Wiring Board Subcategory. The new BPT limitations incorporate more stringent effluent requirements for priority metals, nonconventional pollutants, cyanide, and organic pollutants (by way of an indicator parameter) as compared to the limitations contained in 40 CFR 433.13. EPA has included the conventional pollutants, TSS and oil and grease, in the new BPT regulation for this subcategory at the same level as 40 CFR 433.13. Removals for these pollutants are incidental removals based on the increased control of metals and organic pollutants (by way of an indicator parameter) by the proposed BPT technology options. EPA's decision to base BPT limitations on Option 2 treatment for priority metals, non conventional pollutants, cyanide and organic pollutants reflects primarily two factors: (1) the degree of effluent reductions attainable and (2) the total cost of the proposed treatment technologies in relation to the effluent reductions achieved. No basis could be found for identifying different BPT limitations based on age, size, process, or other engineering factors. Neither the age nor the size of a facility in the Printed Wiring Board Subcategory will directly affect the treatability of MP&M process wastewater. For facilities in this subcategory, the most pertinent factors for establishing the limitations are costs of treatment and the level of effluent reductions obtainable.

Table 14-1 presents the annual pollutant removals for direct dischargers for Option 2; Table 14-2 presents the cost per pound removed using only the pounds of COD removed. EPA estimates that implementation of Option 2 will cost $1.92 per pound of COD removed (1996 dollars). The Agency has concluded that the costs of BPT Option 2 are achievable and are reasonable as compared to the removals achieved by this option.

The technology proposed in Option 2 represents the average of the best performing facilities due to the prevalence of chemical precipitation followed by sedimentation in this subcategory. The Agency estimates that 100 percent of the direct discharging facilities in the Printed Wiring Board Subcategory employ chemical precipitation and sedimentation treatment (Option 2); however, the Agency did identify indirect dischargers in this subcategory with Option 4 technology in place. In fact, EPA collected wastewater treatment samples at one indirect discharging printed wiring board manufacturing facility that used Option 4 technology.

Based on the available database, Option 4 only removes, on an annual basis, an additional 48,000 pounds of priority and nonconventional metals, while removing 9,000 less pounds of COD, and 250 less pounds of priority and nonconventional organic pollutants than Option 2. In addition, Option 4's annualized cost is $2 million more than Option 2. EPA concluded that the lack of significant overall additional pollutant removals achieved by Option 4 (and the fact that it removes less COD and organic pollutants) support the selection of Option 2 as the BPT technology basis. Table 14-6 lists the proposed BPT effluent limitations for the Printed Wiring Board Subcategory.

EPA’s data editing procedures and statistical methodology for calculating BPT limitations are explained in Section 10.0. In general, EPA calculated the new BPT limitations for this subcategory using data from facilities in the Printed Wiring Board Subcategory employing Option 2 technology. As discussed above, EPA did not calculate new limitations for TSS or oil

and grease for this subcategory. Instead, EPA set them at the same level as in the Metal Finishing effluent guidelines (40 CFR 433.13). For cyanide limitations, EPA used data from all subcategories where cyanide destruction systems were sampled. If data was not sufficient for developing BPT limitations for an individual pollutant in this subcategory, the Agency transferred data from another subcategory.

Existing direct discharging facilities in the Printed Wiring Board Subcategory must achieve the following effluent limitations representing the application of BPT. Discharges must remain within the pH range 6 to 9 and must not exceed the following.

Table 14-6

BPT/BAT Effluent Limitations for the Printed Wiring Board Subcategory

Regulated Parameter		Maximum Daily (mg/L (ppm))	Maximum Monthly Avg. (mg/L (ppm))
1.	Total Suspended Solids (TSS)	60	31
2.	Oil and Grease (as HEM)	52	26
3.	Total Organic Carbon (TOC) (as indicator)	101	67
4.	Total Organics Parameter (TOP)	9.0	4.3
	Chromium	0.25	0.14
6.	Copper	0.55	0.28
7.	Total Cyanide	0.21	0.13
8.	Amenable Cyanide	0.14	0.07
9.	Lead	0.04	0.03
10.	Manganese	1.3	0.64
11.	Nickel	0.30	0.14
12.	Sulfide, Total	31	13
13.	Tin	0.31	0.14
14.	Zinc	0.38	0.22

As explained in Section 15.2.7, upon agreement with the permitting authority, facilities with cyanide treatment have the option of achieving the limitation for either amenable or total cyanide. Additionally, upon agreement with the permitting authority, facilities must choose to monitor for TOP or TOC, or implement a management plan for organic chemicals as specified in Section 15.2.7.

14.1.5 BPT Technology Selection for Steel Forming and Finishing Subcategory

Section 6.2.5 describes the Steel Forming and Finishing Subcategory. The Agency estimates there are approximately 43 direct discharging facilities in this subcategory. EPA previously promulgated BPT and BAT limitations for all of the facilities in this subcategory at 40 CFR Part 420 (Iron and Steel Manufacturing Effluent Limitations Guidelines and Pretreatment Standards). However, EPA developed the regulations applicable to this subcategory approximately 20 years ago, and since that time, changes in the industry, particularly in growth of the number of facilities conducting steel forming and finishing operations without the presence of the typical steel manufacturing processes, and changes in water conservation practices, pollution prevention techniques, and wastewater treatment have occurred. In addition, the operations covered by the proposed rule are segments of the forming and finishing subcategories in 40 CFR 420. The proposed MP&M subcategory is comprised of limitations and standards based on specific forming and finishing operations only. In a separate notice, EPA is proposing to revise other subcategories covered by the Iron and Steel Manufacturing effluent guidelines.

EPA estimates that direct discharging facilities in the new Steel Forming and Finishing Subcategory currently discharge substantial quantities of pollutants to the surface waters of the United States, including 195,000 pounds per year of oil and grease, 1.08 million pounds per year of TSS, 6 million pounds per year of COD, 771,000 pounds per year of priority and nonconventional metal pollutants, 168,000 pounds per year of priority and nonconventional organic pollutants, and 2,300 pounds per year of cyanide. As a result of the quantity of pollutant currently discharged directly to the nation's waters by steel forming and finishing facilities, EPA determined that there is a need for BPT regulation for this subcategory.

Facilities in the proposed MP&M Steel Forming and Finishing Subcategory generally perform unit operations such as acid pickling, annealing, conversion coating (e.g., zinc phosphate, copper sulfate), hot dip coating, electroplating, heat treatment, welding, and drawing of steel bar, rod, and wire that produce metal-bearing and oil-bearing wastewater. Therefore, EPA considered technology Options 1 through 4 for this subcategory. As explained above, EPA only discusses Options 2 and 4 in detail in this section since these options costed less and removed more pollutants than Options 1 and 3, respectively.

The Agency is proposing Option 2 as the basis for the new BPT regulation for the Steel Forming and Finishing Subcategory. EPA's decision to propose BPT limitations based on Option 2 treatment reflects primarily two factors: (1) the degree of effluent reductions attainable and (2) the total cost of the proposed treatment technologies in relation to the effluent reductions achieved. No basis could be found for identifying different BPT limitations based on age, size, process, or other engineering factors. Neither the age nor the size of a facility in the Steel Forming and Finishing Subcategory will directly affect the treatability of MP&M process wastewater. For facilities in this subcategory, the most pertinent factors for establishing the limitations are costs of treatment and the level of effluent reductions obtainable.

Table 14-1 presents the annual pollutant removals for direct dischargers for Option 2; Table 14-2 presents the cost per pound removed using only the pounds of COD removed. EPA estimates that implementation of Option 2 will cost $6.51 per pound of COD removed (1996 dollars). The Agency has concluded that the costs of BPT Option 2 are achievable and are reasonable as compared to the removals achieved by this option.

The technology proposed in Option 2 represents the average of the best performing facilities due to the prevalence of chemical precipitation followed by sedimentation in this subcategory. The Agency estimates that 64 percent of the direct discharging facilities in this subcategory employ chemical precipitation followed by sedimentation (Option 2). Because no facilities in this subcategory employ microfiltration after chemical precipitation for solids separation, the Agency concluded that Option 4 does not represent BPT. Table 14-8 lists the proposed BPT effluent limitations for the Steel Forming and Finishing Subcategory.

EPA's data editing procedures and statistical methodology for calculating BPT limitations are explained in Section 10.0. In general, EPA calculated BPT limitations for the Steel Forming and Finishing Subcategory using data transferred from facilities employing Option 2 technology in the General Metals subcategory. However, EPA determined that mass-based limitations (rather than concentration-based limitations developed for the General Metals subcategory) are more appropriate for this subcategory. Facilities in this subcategory keep close track of their production on a mass basis primarily because of their prior regulation under the mass-based Iron and Steel Manufacturing effluent guidelines. Furthermore, EPA determined that mass-based limitations are appropriate for this subcategory due to the uniform nature of the products produced (wire, rod, bar, pipe, and tube). The uniform nature of the products produced by this industry makes for an easier conversion from concentration-based to mass-based limitations. One of the primary reasons that EPA is not requiring mass-based limitations for other subcategories is the fact that most MP&M facilities do not collect production information on a wastestream-by-wastestream basis, and therefore development of mass-based limitations could create a significant burden for both the POTW and the MP&M facility. In the case of the Steel Forming and Finishing subcategory, EPA is able to use the industry's production information to propose production-based limitations for the Steel Forming and Finishing Subcategory.

In the proposal, EPA solicits paired treatment system influent and effluent data from Steel Forming and Finishing facilities, so that limits may better reflect treatment at Steel Forming and Finishing facilities. EPA also solicits comment on whether to allow concentration-based limits for this subcategory and any rationale for doing so. For cyanide limitations, EPA used data from all subcategories where cyanide destruction systems were sampled. The Statistical Development Document contains detailed information on which facilities EPA used in calculating the proposed BPT limitations.

EPA expresses the proposed effluent limitations guidelines and standards for BPT, BAT, NSPS, PSES, and PSNS for the Steel Forming and Finishing Subcategory as mass limitations in pounds/1,000 pounds of product. The Agency derived the mass limitations by

multiplying an effluent concentration (determined from the analysis of treatment system performance) by an appropriate wastewater volume ("production-normalized flow") determined for each forming or finishing operation expressed in gallons/ton of product. EPA developed the production normalized flows used to develop the limits in the proposed rule from survey questionnaire responses from Steel Forming and Finishing facilities. The production-normalized flows are listed in Table 14-7.

Table 14-7

Production Normalized Flows (PNF) for Steel Forming and Finishing

Unit Operation	PNF (gallons/ton)
Acid Pickling	500
Alkaline Cleaning	500
Cold Forming	0
Continuous Annealing	25
Electroplating	1000
Hot Dip Coating	145
Lubrication	12
Mechanical Descaling	2
Painting	65
Pressure Deformation	25

EPA defines the unit operations listed in Table 14-7 as follows.

(a) *Acid pickling* means the removal of scale and/or oxide from steel surfaces using acid solutions. The mass-based limitations for acid pickling operations include wastewater flow volumes from acid treatment with and without chromium, acid pickling neutralization, annealing, alkaline cleaning, electrolytic sodium sulfate descaling, and salt bath descaling.

(b) *Alkaline cleaning* means the application of solutions containing caustic soda, soda ash, alkaline silicates, or alkaline phosphates to a metal surface primarily for removing mineral deposits, animal fats, and oils. The mass-based limitations for alkaline cleaning operations include wastewater flow volumes from alkaline cleaning for oil removal, alkaline treatment without cyanide, aqueous degreasing, and electrolytic cleaning operations.

(c) *Cold forming* means operations conducted on unheated steel for purposes of imparting desired mechanical properties and surface qualities (density, smoothness) to the steel. The mass-based limitations for cold forming operations are based on zero wastewater discharge.

(d) *Continuous Annealing* means a heat treatment process in which steel is exposed to an elevated temperature in a controlled atmosphere for an extended period of time

and then cooled. The mass-based limitations for continuous annealing operations include wastewater flow volumes from heat treating operations.

(e) *Electroplating* means the application of metal coatings including, but not limited to, chromium, copper, nickel, tin, zinc, and combinations thereof, on steel products using an electro-chemical process. The mass-based limitations for electroplating operations includes wastewater flow volumes from acid pickling, annealing, alkaline cleaning, electroplating without chromium or cyanide, and electroless plating operations.

(f) *Hot Dip Coating* means the coating of pre-cleaned steel parts by immersion in a molten metal bath. The mass-based limitations for hot dip coating operations includes wastewater flow volumes from acid pickling, annealing, alkaline cleaning, chemical conversion coating without chromium, chromate conversion coating, galvanizing, and hot dip coating operations.

(g) *Lubrication* means the process of applying a substance to the surface of the steel in order to reduce friction or corrosion. The mass-based limitations for lubrication operations includes wastewater flow volumes from corrosion preventive coating operations as defined in 438.61(b).

(h) *Mechanical Descaling* means the process of removing scale by mechanical or physical means from the surface of steel. The mass-based limitations for mechanical descaling operations includes wastewater flow volumes from abrasive blasting, burnishing, grinding, impact deformation, machining, and testing operations.

(i) *Painting* means applying an organic coating to a steel bar, rod, wire, pipe, or tube. The mass-based limitations for painting operations includes wastewater flow volumes from spray or brush painting and immersion painting.

(j) *Pressure Deformation* means applying force (other than impact force) to permanently deform or shape a steel bar, rod, wire, pipe, or tube. The mass-based limitations for pressure deformation operations includes wastewater flow volumes from forging operations and extrusion operations.

EPA transferred the effluent concentrations used to develop the proposed Steel Forming and Finishing Subcategory limitations and standards from those used for the General Metals Subcategory because it did not collect analytical wastewater data from Steel Forming and Finishing facilities that used the Option 2 treatment technology. EPA believes that the wastewater characteristics of the General Metals Subcategory closely resemble those of the Steel Forming and Finishing subcategory. EPA will conduct analytical wastewater sampling of well-operated chemical precipitation and clarification systems at Steel Forming and Finishing facilities post-proposal. EPA intends on developing limitations and standards for this subcategory for the final rule that would be based on the Steel Forming and Finishing facilities in this subcategory.

Permit writers and control authorities shall compute mass effluent limitations and pretreatment requirements for each forming/finishing operation by multiplying the average daily production rate (or other reasonable measure of production) by the respective effluent limitations guidelines or standards listed in Table 14-8. In determining the production rate for the Steel

Forming and Finishing Subcategory, EPA is proposing to require permit writers and control authorities to use the following protocols:

(1) For similar, multiple production lines with process waters treated in the same wastewater treatment system, the reasonable measure of production shall be determined from the combined production of the similar production lines during the same time period.

(2) For process wastewater treatment systems where wastewater from two or more different production lines are commingled in the same wastewater treatment system, the reasonable measure of production shall be determined separately for each production line (or combination of similar production lines) during the same time period.

Permit writers and control authorities shall not include production from unit operations that do not generate or discharge process wastewater in the calculation of the operating rate.

The mass effluent limitations or pretreatment requirements applicable at a given NPDES or pretreatment compliance monitoring point shall be the sum of the mass effluent limitations or pretreatment requirements for each regulated pollutant parameter within each applicable forming/finishing operation with process wastewater discharging to that compliance monitoring point.

Existing direct discharging facilities in the Steel Forming and Finishing Subcategory must achieve the following effluent limitations representing the application of BPT. Discharges must remain within the pH range 6 to 9 and must not exceed the following.

Table 14-8

BPT/BAT Effluent Limitations for the Steel Forming and Finishing Subcategory

Pollutant	TSS		O&G (as HEM)	
Forming/Finishing Operation	Maximum Daily (lbs/1000 lbs of product)	Maximum Monthly Avg. (lbs/1000 lbs of product)	Maximum Daily (lbs/1000 lbs of product)	Maximum Monthly Avg. (lbs/1000 lbs of product)
(a) Acid Pickling	0.0709	0.0369	0.0312	0.0239
(b) Alkaline Cleaning	0.0709	0.0369	0.0312	0.0239
(c) Cold Forming	0	0	0	0
(d) Continuous Annealing	0.00355	0.00184	0.00156	0.00120
(e) Electroplating	0.142	0.0737	0.0623	0.0478
(f) Hot Dip Coating	0.0206	0.0107	0.00903	0.00693
(g) Lubrication	0.00170	0.000884	0.000748	0.000574
(h) Mechanical Descaling	0.000284	0.000148	0.000125	0.0000956
(i) Painting	0.00922	0.00479	0.00405	0.00311
(j) Pressure Deformation	0.00355	0.00184	0.00156	0.00120

Pollutant	TOC		TOP	
Forming/Finishing Operation	Maximum Daily (lbs/1000 lbs of product)	Maximum Monthly Avg. (lbs/1000 lbs of product)	Maximum Daily (lbs/1000 lbs of product)	Maximum Monthly Avg. (lbs/1000 lbs of product)
(a) Acid Pickling	0.181	0.103	0.0188	0.00896
(b) Alkaline Cleaning	0.181	0.103	0.0188	0.00896
(c) Cold Forming	0	0	0	0
(d) Continuous Annealing	0.00901	0.00514	0.000937	0.000448
(e) Electroplating	0.361	0.206	0.0375	0.0180
(f) Hot Dip Coating	0.0523	0.0300	0.00543	0.00260
(g) Lubrication	0.00433	0.00247	0.000450	0.000215

Table 14-8 (Continued)

(h) Mechanical Descaling	0.000721	0.000411	0.0000750	0.0000359
(i) Painting	0.0235	0.0134	0.00244	0.00117
(j) Pressure Deformation	0.00901	0.00514	0.000937	0.000448

Pollutant	**Cadmium**		**Chromium**	
Forming/Finishing Operation	**Maximum Daily (lbs/1000 lbs of product)**	**Maximum Monthly Avg. (lbs/1000 lbs of product)**	**Maximum Daily (lbs/1000 lbs of product)**	**Maximum Monthly Avg. (lbs/1000 lbs of product)**
(a) Acid Pickling	0.000292	0.000188	0.000509	0.000277
(b) Alkaline Cleaning	0.000292	0.000188	0.000509	0.000277
(c) Cold Forming	0	0	0	0
(d) Continuous Annealing	0.0000146	0.00000938	0.0000255	0.0000139
(e) Electroplating	0.000583	0.000376	0.00102	0.000553
(f) Hot Dip Coating	0.0000845	0.0000545	0.000148	0.0000801
(g) Lubrication	0.00000699	0.00000450	0.0000123	0.00000663
(h) Mechanical Descaling	0.00000116	0.00000075	0.00000204	0.00000110
(i) Painting	0.0000379	0.0000244	0.0000662	0.0000359
(j) Pressure Deformation	0.0000146	0.00000938	0.0000255	0.0000139

Pollutant	**Copper**		**Lead**	
Forming/Finishing Operation	**Maximum Daily (lbs/1000 lbs of product)**	**Maximum Monthly Avg. (lbs/1000 lbs of product)**	**Maximum Daily (lbs/1000 lbs of product)**	**Maximum Monthly Avg. (lbs/1000 lbs of product)**
(a) Acid Pickling	0.00114	0.000565	0.0000737	0.0000522
(b) Alkaline Cleaning	0.00114	0.000565	0.0000737	0.0000522
(c) Cold Forming	0	0	0	0
(d) Continuous Annealing	0.0000570	0.0000283	0.00000368	0.00000261
(e) Electroplating	0.00228	0.00113	0.000148	0.000105

Table 14-8 (Continued)

(f) Hot Dip Coating	0.000331	0.000164	0.0000214	0.0000152
(g) Lubrication	0.0000274	0.0000136	0.00000177	0.00000125
(h) Mechanical Descaling	0.00000455	0.00000226	0.00000029	0.00000021
(i) Painting	0.000148	0.0000734	0.00000957	0.00000678
(j) Pressure Deformation	0.0000570	0.0000283	0.00000368	0.00000261

Pollutant	**Manganese**		**Molybdenum**	
Forming/Finishing Operation	**Maximum Daily (lbs/1000 lbs of product)**	**Maximum Monthly Avg. (lbs/1000 lbs of product)**	**Maximum Daily (lbs/1000 lbs of product)**	**Maximum Monthly Avg. (lbs/1000 lbs of product)**
(a) Acid Pickling	0.000269	0.000183	0.00164	0.00103
(b) Alkaline Cleaning	0.000269	0.000183	0.00164	0.00103
(c) Cold Forming	0	0	0	0
(d) Continuous Annealing	0.0000135	0.00000914	0.0000820	0.0000511
(e) Electroplating	0.000537	0.000366	0.00328	0.00205
(f) Hot Dip Coating	0.0000779	0.0000531	0.000476	0.000297
(g) Lubrication	0.00000644	0.00000439	0.0000394	0.0000246
(h) Mechanical Descaling	0.00000107	0.00000073	0.00000656	0.00000409
(i) Painting	0.0000350	0.0000238	0.000214	0.000133
(j) Pressure Deformation	0.0000135	0.00000914	0.0000820	0.0000511

Pollutant	**Nickel**		**Silver**	
Forming/Finishing Operation	**Maximum Daily (lbs/1000 lbs of product)**	**Maximum Monthly Avg. (lbs/1000 lbs of product)**	**Maximum Daily (lbs/1000 lbs of product)**	**Maximum Monthly Avg. (lbs/1000 lbs of product)**
(a) Acid Pickling	0.00104	0.000642	0.000456	0.000187
(b) Alkaline Cleaning	0.00104	0.000642	0.000456	0.000187
(c) Cold Forming	0	0	0	0
(d) Continuous Annealing	0.0000520	0.0000321	0.0000228	0.00000934

Table 14-8 (Continued)

Pollutant	Nickel		Silver	
(e) Electroplating	0.00208	0.00129	0.000912	0.000374
(f) Hot Dip Coating	0.000302	0.000186	0.000133	0.0000542
(g) Lubrication	0.0000250	0.0000154	0.0000110	0.00000448
(h) Mechanical Descaling	0.00000415	0.00000257	0.00000182	0.00000075
(i) Painting	0.000135	0.0000834	0.0000593	0.0000243
(j) Pressure Deformation	0.0000520	0.0000321	0.0000228	0.00000934

Pollutant	Sulfide (as S)		Tin	
Forming/Finishing Operation	Maximum Daily (lbs/1000 lbs of product)	Maximum Monthly Avg. (lbs/1000 lbs of product)	Maximum Daily (lbs/1000 lbs of product)	Maximum Monthly Avg. (lbs/1000 lbs of product)
(a) Acid Pickling	0.0630	0.0267	0.00274	0.00139
(b) Alkaline Cleaning	0.0630	0.0267	0.00274	0.00139
(c) Cold Forming	0	0	0	0
(d) Continuous Annealing	0.00315	0.00134	0.000137	0.0000694
(e) Electroplating	0.126	0.0534	0.00547	0.00278
(f) Hot Dip Coating	0.0183	0.00774	0.000793	0.000403
(g) Lubrication	0.00151	0.000641	0.0000656	0.0000333
(h) Mechanical Descaling	0.000252	0.000107	0.0000110	0.00000555
(i) Painting	0.00818	0.00347	0.000356	0.000181
(j) Pressure Deformation	0.00315	0.00134	0.000137	0.0000694

Pollutant	Zinc	
Forming/Finishing Operation	Maximum Daily (lbs/1000 lbs of product)	Maximum Monthly Avg. (lbs/1000 lbs of product)
(a) Acid Pickling	0.000793	0.000456
(b) Alkaline Cleaning	0.000793	0.000456
(c) Cold Forming	0	0

Table 14-8 (Continued)

(d) Continuous Annealing	0.0000397	0.0000228
(e) Electroplating	0.00159	0.000912
(f) Hot Dip Coating	0.000230	0.000133
(g) Lubrication	0.0000191	0.0000110
(h) Mechanical Descaling	0.00000317	0.00000182
(i) Painting	0.000103	0.0000593
(j) Pressure Deformation	0.0000397	0.0000228

Pollutant	Cyanide (T)		Cyanide (A)	
Forming/Finishing Operation	Maximum Daily (lbs/1000 lbs of product)	Maximum Monthly Avg. (lbs/1000 lbs of product)	Maximum Daily (lbs/1000 lbs of product)	Maximum Monthly Avg. (lbs/1000 lbs of product)
(a) Electroplating	0.000865	0.000513	0.000580	0.000282

As explained in Section 15.2.7, upon agreement with the permitting authority, facilities with cyanide treatment have the option of achieving the limitation for either amenable or total cyanide. Additionally, upon agreement with the permitting authority, facilities must choose to monitor for TOP or TOC, or implement a management plan for organic chemicals as specified in Section 15.2.7.

14.1.6 BPT Technology Selection for the Oily Wastes Subcategory

Section 6.2.6 describes the Oily Wastes Subcategory. EPA estimates that approximately 900 MP&M direct discharging facilities in the Oily Wastes Subcategory currently discharge substantial quantities of pollutants to the surface waters of the United States, including 965,000 pounds per year of oil and grease, 414,00 pounds per year of TSS, 6.4 million pounds per year of COD, 595,000 pounds per year of priority and nonconventional metal pollutants, and 135,000 pounds per year of priority and nonconventional organic pollutants. As a result of the quantity of pollutant currently discharged directly to the nation's waters by oily waste facilities, EPA determined that there is a need for BPT regulation for this subcategory.

Facilities in the Oily Wastes Subcategory generally perform unit operations such as alkaline cleaning and its associated rinses to remove oil and dirt from components, machining and grinding that produce wastewater containing coolants and lubricants, and dye penetrant and magnetic flux testing that produce mainly oil-bearing wastewater (Section 6.2.6 lists the unit operations that define the applicability of this subcategory). Because of the oily nature of the wastewater, EPA considered technology options 5 through 8 for this subcategory. Section 9.0

describes the technology options. (EPA did not consider oily wastewater treatment using dissolved air flotation (DAF) (Options 9 and 10) because it was not widely used by facilities in this subcategory. The Agency analyzed the DAF options for the Railroad Line Maintenance and Shipbuilding Dry Dock Subcategories only.) As explained above, EPA only discusses Options 6 and 8 in this document in detail since these options costed less and removed more pollutants than Options 5 and 7, respectively.

The Agency selected Option 6, oil/water separation by chemical emulsion breaking, gravity separation, and oil skimming, as the basis for the new BPT regulation for the Oily Wastes Subcategory. EPA's decision to propose BPT limitations on Option 6 treatment reflects primarily two factors: (1) the degree of effluent reductions attainable and (2) the total cost of the proposed treatment technologies in relation to the effluent reductions achieved. No basis could be found for identifying different BPT limitations based on age, size, process, or other engineering factors. Neither the age nor the size of a facility in the Oily Wastes Subcategory will directly affect the treatability of MP&M process wastewater. For facilities in this subcategory, the most pertinent factors for establishing the limitations are costs of treatment and the level of effluent reductions obtainable.

Table 14-1 presents the annual pollutant removals for direct dischargers for Option 6; Table 14-2 presents the cost per pound removed using only the pounds of COD removed. EPA estimates that implementation of Option 6 will cost $2.18 per pound of COD removed (1996 dollars). The Agency has concluded that the costs of BPT Option 6 are achievable and are reasonable as compared to the removals achieved by this option.

The technology proposed in Option 6 represents the average of the best performing facilities due to the prevalence of chemical emulsion breaking and oil skimming in this subcategory. The Agency estimates that 11 percent of the direct discharging facilities in the Oily Wastes Subcategory perform oil/water separation through chemical emulsion breaking (Option 6) while only 4 percent employ ultrafiltration (Option 8).

Based on the available data base, Option 8 only removes, on an annual basis, an additional 19,000 pounds of TSS, and 56,600 pounds of oil and grease, while removing 1.42 million less pounds of COD, 12,000 less pounds of priority and nonconventional metals, and 2,400 less pounds of priority and nonconventional organic pollutants than Option 6. In addition, Option 8's annualized cost is $43 million more than Option 6. EPA concluded that the lack of significant overall additional pollutant removals achieved by Option 8 do not justify its use as a basis for BPT for this subcategory. Table 14-9 lists the proposed BPT effluent limitations for the Oily Wastes Subcategory.

EPA’s data editing procedures and statistical methodology for calculating BPT limitations are explained in Section 10.0. EPA calculated BPT limitations for this subcategory using data from facilities in the Oily Wastes subcategory employing Option 6 technology.

Existing direct discharging facilities in the Oily Wastes Subcategory must achieve the following effluent limitations representing the application of BPT. Discharges must remain within the pH range 6 to 9 and must not exceed the following.

Table 14-9

BPT/BAT Effluent Limitations for the Oily Wastes Subcategory

Regulated Parameter		Maximum Daily (mg/L (ppm))	Maximum Monthly Avg. (mg/L (ppm))
1.	Total Suspended Solids (TSS)	63	31
2.	Oil and Grease (as HEM)	27	20
3.	Total Organic Carbon (TOC) (as indicator)	633	378
4.	Total Organics Parameter (TOP)	9.0	4.3
5.	Sulfide, Total	31	13

Upon agreement with the permitting authority, facilities must choose to monitor for TOP or TOC, or implement a management plan for organic chemicals as specified in Section 15.2.7.

14.1.7 BPT Technology Selection for the Railroad Line Maintenance Subcategory

Section 6.2.7 describes the Railroad Line Maintenance Subcategory. The Agency estimates that there are approximately 34 direct discharging facilities in this subcategory. EPA determined that BPT limitations for this subcategory were necessary because of the oil and grease and potential TSS loads that facilities in this subcategory generate. EPA estimates that direct discharging facilities in the Railroad Line Maintenance Subcategory currently discharge substantial quantities of pollutants to the surface waters of the United States, including 52,000 pounds per year of oil and grease, 170,000 pounds per year of COD, 18,000 pounds per year of TSS, 54,000 pounds per year of priority and nonconventional metal pollutants, and 1,600 pounds per year of priority and nonconventional organic pollutants. As a result of the quantity of pollutant currently discharged directly to the nation's waters by railroad line maintenance facilities, EPA determined that there is a need for BPT regulation for this subcategory.

Facilities in the Railroad Line Maintenance Subcategory generally perform unit operations that produce mainly oil-bearing wastewater, such as alkaline cleaning and its associated rinses to remove oil and dirt from components, and machining and grinding, which use coolants and lubricants. Because of the oily nature of the wastewater, EPA considered technology options 7 through 10 for this subcategory. Section 9.0 describes the technology options. EPA did not consider oily wastewater treatment using oil/water separation through emulsion breaking (Options 5 and 6) for this subcategory because a large number of railroad line maintenance facilities currently use DAF (Options 9 and 10). As explained above, EPA only

discusses Options 8 and 10 in detail in this section since these options costed less and removed more pollutants than Options 7 and 9, respectively.

The Agency selected Option 10, oil/water separation by DAF, as the basis for the new BPT regulation for the Railroad Line Maintenance Subcategory. EPA's decision to propose BPT limitations based on Option 10 treatment reflects primarily two factors: (1) the degree of effluent reductions attainable and (2) the total cost of the proposed treatment technologies in relation to the effluent reductions achieved. No basis could be found for identifying different BPT limitations based on age, size, process, or other engineering factors. Neither the age nor the size of a facility in the Railroad Line Maintenance Subcategory will directly affect the treatability of MP&M process wastewater. For facilities in this subcategory, the most pertinent factors for establishing the limitations are costs of treatment and the level of effluent reductions obtainable.

Table 14-1 presents the annual pollutant removals for direct dischargers for Option 10; Table 14-2 presents the cost per pound removed using only the pounds of oil and grease removed. EPA estimates that implementation of Option 10 will cost $20.00 per pound of COD removed (1996 dollars). The Agency has concluded that the costs of BPT Option 10 are achievable and are reasonable as compared to the removals achieved by this option.

The technology proposed in Option 10 represents the average of the best performing facilities due to the prevalence of DAF in this subcategory. The Agency estimates that 91 percent of the direct discharging facilities in the Railroad Line Maintenance Subcategory employ DAF (Option 10), while no facilities employ ultrafiltration (Option 8). Because no facilities in this subcategory employ ultrafiltration to remove oil and grease, the Agency concluded that Option 8 does not represent BPT. Table 14-10 lists the proposed BPT effluent limitations for the Railroad Line Maintenance Subcategory.

EPA’s data editing procedures and statistical methodology for calculating BPT limitations are explained in Section 10.0. EPA calculated BPT limitations for this subcategory using data from facilities in the Railroad Line Maintenance subcategory employing Option 10 technology. In cases where data from the Railroad Line Maintenance subcategory was not sufficient for a particular pollutant, the Agency transferred effluent data from facilities in the Shipbuilding Dry Dock subcategory in order to develop a proposed BPT limitation.

Existing direct discharging facilities in the Railroad Line Maintenance Subcategory must achieve the following effluent limitations representing the application of BPT. Discharges must remain within the pH range 6 to 9 and must not exceed the following.

Table 14-10

BPT Effluent Limitations for the Railroad Line Maintenance Subcategory

Regulated Parameter		Maximum Daily (mg/L (ppm))	Maximum Monthly Avg. (mg/L (ppm))
1.	BOD_5	34	12
2.	Total Suspended Solids (TSS)	30	16
3.	Oil and Grease (as HEM)	11	8

14.1.8 BPT Technology Selection for the Shipbuilding Dry Dock Subcategory

Section 6.2.8 describes the Shipbuilding Dry Dock Subcategory. The Agency estimates there are six direct discharging facilities in this subcategory. The Agency notes that many shipbuilders operate multiple dry docks (or similar structures) and that this is the number of estimated facilities (not dry docks) that discharge MP&M process wastewater from dry docks (and similar structures). EPA determined that BPT limitations for this subcategory were necessary because of the oil and grease and potential TSS loads that facilities in this subcategory generate. EPA estimates that direct discharging facilities in the Shipbuilding Dry Dock Subcategory currently discharge substantial quantities of pollutants to the surface waters of the United States, including 8.5 million pounds per year of oil and grease, 18,400 pounds per year of TSS, 976,000 pounds per year of COD, 88,500 pounds per year of priority and nonconventional metal pollutants, and 6,000 pounds per year of priority and nonconventional organic pollutants. As a result of the quantity of pollutants currently discharged directly to the nation's waters by shipbuilding dry dock facilities, EPA determined that there is a need for BPT regulation for this subcategory.

Facilities in the Shipbuilding Dry Dock Subcategory generally perform unit operations that produce mainly oil-bearing wastewater, such as abrasive blasting, hydroblasting, painting, welding, corrosion preventive coating, floor cleaning, aqueous degreasing, and testing (e.g., hydrostatic testing). Because of the oily nature of the wastewater, EPA considered technology options 7 through 10 for this subcategory. Section 9.0 describes the technology options. EPA did not consider oily wastewater treatment using oil/water separation through chemical emulsion breaking (Options 5 and 6) for this subcategory because all of the shipbuilding dry dock facilities in EPA's database currently use DAF (Options 9 and 10). As explained above, EPA only discusses Options 8 and 10 in detail in this section since these options costed less and removed more pollutants than Options 7 and 9, respectively.

The Agency selected Option 10, oil/water separation by DAF, as the basis for the new BPT regulation for the Shipbuilding Dry Dock Subcategory. EPA's decision to propose BPT limitations based on Option 10 treatment reflects primarily two factors: (1) the degree of

effluent reductions attainable and (2) the total cost of the proposed treatment technologies in relation to the effluent reductions achieved. No basis could be found for identifying different BPT limitations based on age, size, process, or other engineering factors. Neither the age nor the size of a facility in the Shipbuilding Dry Dock Subcategory will directly affect the treatability of MP&M process wastewater. For facilities in this subcategory, the most pertinent factors for establishing the limitations are costs of treatment and the level of effluent reductions obtainable.

Table 14-1 presents the annual pollutant removals for direct dischargers for Option 10; Table 14-2 presents the cost per pound removed using only the pounds of oil and grease removed. EPA estimates that implementation of Option 10 will cost $0.25 per pound of oil and grease removed (1996 dollars). The Agency has concluded that the costs of BPT Option 10 are achievable and are reasonable as compared to the removals achieved by this option.

The technology proposed in Option 10 represents the average of the best performing facilities due to the prevalence of DAF in this subcategory. According to EPA's database, 100 percent of the direct discharging facilities in the Shipbuilding Dry Dock Subcategory employ DAF (Option 10) while no facilities employ ultrafiltration (Option 8). Because no facilities in this subcategory employ ultrafiltration to remove oil and grease, the Agency concluded that Option 8 does not represent best practicable control technology. Table 14-11 lists the proposed BPT effluent limitations for the Shipbuilding Dry Docks Subcategory.

EPA's data editing procedures and statistical methodology for calculating BPT limitations are explained in Section 10.0. EPA calculated BPT limitations for this subcategory using data from facilities in the Shipbuilding Dry Dock subcategory employing Option 10 technology.

Existing direct discharging facilities in the Shipbuilding Dry Dock Subcategory must achieve the following effluent limitations representing the application of BPT. Discharges must remain within the pH range 6 to 9 and must not exceed the following.

Table 14-11

BPT Effluent Limitations for the Shipbuilding Dry Dock Subcategory

	Regulated Parameter	Maximum Daily[1]	Maximum Monthly Avg.[1]
1.	Total Suspended Solids (TSS)	81	44
2.	Oil and Grease (as HEM)	16	11

14.2 Best Conventional Pollutant Control Technology (BCT)

The BCT methodology, promulgated in 1986 (51 FR 24974), discusses the Agency's consideration of costs in establishing BCT effluent limitations guidelines. EPA evaluates the reasonableness of BCT candidate technologies (those that are technologically feasible) by applying a two-part cost test:

(1) The POTW test; and
(2) The industry cost-effectiveness test.

In the POTW test, EPA calculates the cost per pound of conventional pollutant removed by industrial dischargers in upgrading from BPT to a BCT candidate technology and then compares this cost to the cost per pound of conventional pollutant removed in upgrading POTWs from secondary treatment. The upgrade cost to industry must be less than the POTW benchmark of $0.25 per pound (in 1976 dollars).

In the industry cost-effectiveness test, the ratio of the incremental BPT to BCT cost divided by the BPT cost for the industry must be less than 1.29 (i.e., the cost increase must be less than 29 percent).

14.2.1 BCT Option for Metal-Bearing Wastewater

For the MP&M proposed rule, EPA considered whether or not to establish BCT effluent limitations guidelines for MP&M sites that would attain incremental levels of effluent reduction beyond BPT for TSS. The only technology option identified to attain further TSS reduction is the addition of multimedia filtration to existing BPT systems. For the BCT option, EPA considered adding multimedia filtration to the BPT technology option for the General Metals, Metal Finishing Job Shops, Non-Chromium Anodizing, Printed Wiring Board, and Steel Forming and Finishing Subcategories (i.e., the metal-bearing subcategories).

EPA applied the BCT cost test to the use of multimedia filtration technology as a means to reduce TSS loadings. EPA split the MP&M sites into three flow categories: less than 10,000 gallons per year (gpy)), 10,000 gpy and 1,000,000 gpy; and greater than 1,000,000 gpy. For each of these three flow categories, EPA chose a representative site for which EPA had estimated the costs of installing the Option 2 technologies discussed under BPT (see Section 14.1 above). The Agency evaluated the costs of installing a polishing multimedia filter to remove an estimated additional 35 percent of the TSS discharged after chemical precipitation and clarification treatment. This estimated removal reflects the reduced TSS concentrations seen when filters are used after chemical precipitation and sedimentation in the MP&M industry. The cost per pound removed for facilities discharging greater than 1 million gallons per year (1 MGY) was $13/lb of TSS (in 1976 dollars), the cost per pound removed for facilities discharging between 10,000 and 1,000,000 gpy was $518/lb, and the cost per pound removed for facilities discharging less than 10,000 gpy was $1,926/lb of TSS (in 1976 dollars). All of these cases individually as well as combined exceed the $0.25/lb (in 1976 dollars) POTW cost test

value. Because these costs exceed the POTW benchmark, the first part of the cost test fails; therefore, the second part of the test was unnecessary. As a result, EPA determined that multimedia filtration does not pass the cost test for BCT regulations development. In light of the above, EPA is proposing to set BCT limitations for the General Metals, Metal Finishing Job Shops, Non-Chromium Anodizing, Printed Wiring Board, and Steel Forming and Finishing Subcategories equivalent to BPT limitations for their respective subcategories.

14.2.2 BCT Option for Oil-Bearing Wastewater

For the MP&M proposed rule, EPA considered whether or not to establish BCT effluent limitations guidelines for MP&M facilities that would attain incremental levels of effluent reduction beyond BPT for oil and grease. EPA considered adding an ultrafilter to existing BPT systems (oil/water separation by chemical emulsion breaking, gravity separation, and oil skimming) as a viable technology option to attain further oil and grease reduction. EPA considered this BCT option for the Oily Wastes, Railroad Line Maintenance, and Shipbuilding Dry Dock Subcategories.

EPA applied the BCT cost test to the use of ultrafiltration technology as a means to reduce oil and grease loadings. EPA split the MP&M sites into three flow categories: less than 10,000 gpy, 10,000 gpy to 1,000,000 gpy; and greater than 1,000,000 gpy. For each of these three flow categories, EPA chose a representative site for which EPA had estimated the costs of installing the Option 2 technologies discussed under BPT (See Section 14.1 above). The Agency evaluated the costs of installing an ultrafilter to remove an estimated additional 36 percent of the oil and grease discharged after oil/water separation by chemical emulsion breaking, gravity separation, and oil skimming. This estimated removal reflects the reduced oil and grease concentrations seen when ultrafilters are used after chemical emulsion breaking with oil skimming in the MP&M industry. The cost per pound removed for facilities discharging greater than 1 MGY was $238/lb of oil and grease (in 1976 dollars), the cost per pound removed for facilities discharging between 10,000 and 1 MGY was $2,213/lb, and the cost per pound removed for facilities discharging less than 10,000 gpy was $5,031/lb of oil and grease (in 1976 dollars). All of these cases individually as well as combined exceed the $0.25/lb (in 1976 dollars) POTW cost test value. Because these costs exceed the POTW benchmark, the first part of the cost test fails; therefore, the second part of the test was unnecessary. Therefore, EPA determined that ultrafiltration does not pass the cost test for BCT regulations development. In light of the above, EPA is proposing to set BCT limitations for the Oily Wastes, Railroad Line Maintenance and Shipbuilding Dry Dock Subcategories equivalent to BPT limitations for their respective subcategories.

14.3 Best Available Technology Economically Achievable (BAT)

EPA considers the following factors in establishing the best available technology economically achievable (BAT) level of control: the age of process equipment and facilities, the processes employed, process changes, the engineering aspects of applying various types of control techniques, the costs of applying the control technology, economic impacts imposed by

the regulation, non-water quality environmental impacts such as energy requirements, air pollution, and solid waste generation, and other such factors as the Administrator deems appropriate (section 304(b)(2)(B) of CWA). In general, the BAT technology level represents the best existing economically achievable performance among plants with shared characteristics. In making the determination about economic achievability, the Agency takes into consideration factors such as plant closures and product line closures. Where existing wastewater treatment performance is uniformly inadequate, BAT technology may be transferred from a different subcategory or industrial category. BAT may also include process changes or internal plant controls that are not common industry practice.

EPA considered the same 10 technology options for BAT as discussed under BPT. EPA did not include the application of filters, discussed under BCT, as a BAT option. Data collected during sampling at MP&M facilities demonstrated very little, if any, additional removal of many metal pollutants resulting from the use of filters as compared to concentrations of the same metals after the chemical precipitation and clarification treatment followed by gravity settling. Thus, although filtration is demonstrated to be effective in achieving additional removals of suspended solids and, as such, EPA considered it for the basis of BCT, multimedia or sand filtration does not reflect the best available technology performance for priority and nonconventional pollutants.

For all of the MP&M subcategories (except the Railroad Line Maintenance and Shipbuilding Dry Dock Subcategories), EPA is proposing BAT limitations equivalent to BPT. For the Railroad Line Maintenance and Shipbuilding Dry Dock subcategories, EPA is not proposing BAT limitations. EPA briefly discusses the BAT selection for each of the subcategories in Sections 14.3.1 through 14.3.8.

14.3.1 BAT Technology Selection for the General Metals Subcategory

EPA has not identified any more stringent economically achievable treatment technology option that it considered to represent BAT level of control applicable to General Metals Subcategory facilities. Therefore, the Agency is proposing to establish BAT equivalent to BPT for toxic and nonconventional pollutants for the General Metals Subcategory. EPA estimates that 20 facilities (less than 1 percent of the direct dischargers in this subcategory) will close as a result of BAT based on Option 2. EPA found this option to be economically achievable for the subcategory as a whole. Additionally, the Agency believes that Option 2 represents the “best available” technology as it achieves a high level of pollutant control, treating all priority pollutants to very low levels, often at or near the analytical minimum level.

EPA did evaluate BPT Option 4 as a basis for establishing BAT more stringent than the BPT level of control being proposed. EPA estimates that the economic impact due to the additional controls at Option 4 levels would result in 35 facility closures (<1 percent of the direct dischargers in this subcategory). The Economic, Environmental, and Benefits Analysis of the Proposed Metal Products & Machinery Rule [EPA-821-B-00-0058] discusses job losses. While EPA does not have a bright line for determining what level of impact is economically

achievable for the industry as a whole, EPA looked for a breakpoint that would mitigate adverse economic impacts without greatly affecting the toxic pound-equivalents being removed under the proposed rule. By selecting Option 2 as BAT, EPA was able to reduce facility closures by 43 percent, while only losing about 1.5 percent of the toxic pound equivalents that would be removed under Option 4. Option 4 resulted in some level of improved pollutant reductions; however, the amounts are not very large and the cost of implementing the level of control associated with Option 4 is disproportionately high. Thus, EPA rejected Option 4 as a basis for BAT for this subcategory.

14.3.2 BAT Technology Selection for the Metal Finishing Job Shops Subcategory

The Agency proposes to establish BAT equivalent to BPT for toxic and nonconventional pollutants for the Metal Finishing Job Shops Subcategory. EPA estimates that no facilities will close as a result of BAT based on Option 2. Therefore, the Agency found this option to be economically achievable. Additionally, the Agency believes that Option 2 represents the "best available" technology as it achieves a high level of pollutant control, treating all priority pollutants to very low levels, often at or near the analytical minimum level.

EPA did evaluate transferring technology reflected in BPT Option 4 as a basis for establishing BAT more stringent than the BPT level of control being proposed. As was the case for BAT based on Option 2, EPA estimates that no facilities will close as a result of BAT based on Option 4. Therefore, EPA does consider Option 4 to be economically achievable for this subcategory. However, EPA is not proposing to establish BAT limitations based on Option 4 because it determined that Option 2 achieves nearly equivalent reductions in pound-equivalents for much less cost. By selecting Option 2 as the basis for BAT, EPA reduced annualized compliance costs by $1.1 million (1996 dollars) while only losing 2 percent of the toxic pound-equivalents that would be removed under Option 4. The Agency concluded that the additional costs of Option 4 do not justify the lack of significant additional pollutant removals achieved for direct dischargers in this subcategory. Therefore, EPA determined that Option 2 is the "best available" technology economically achievable for the Metal Finishing Job Shops Subcategory.

14.3.3 BAT Technology Selection for the Non-Chromium Anodizing Subcategory

The Agency proposes to establish BAT equivalent to BPT for toxic and nonconventional pollutants for the Non-Chromium Anodizing Subcategory. As mentioned in the BPT discussion, EPA's survey of the MP&M industry did not identify any non-chromium anodizing facilities discharging directly to surface waters. All of the non-chromium anodizing facilities in EPA's data base are either indirect or zero dischargers. EPA consequently could not evaluate any treatment systems in place at direct discharging non-chromium anodizing facilities for establishing BAT limitations. Therefore, EPA relied on information and data from indirect discharging facilities in the Non-Chromium Anodizing Subcategory. Based on this analysis, the Agency believes that Option 2 represents the "best available" technology as it achieves a high level of pollutant control, treating all priority pollutants to very low levels, often at or near the analytical minimum level.

EPA evaluated transferring technology reflected in BPT Option 4 as a basis for establishing BAT more stringent than the BPT level of control being proposed. However, EPA is not proposing to establish BAT limitations based on Option 4 because it determined that Option 2 achieves nearly equivalent reductions in pound-equivalents for much less cost. EPA used a facility with a flow of 6.25 MGY (the median discharge flow for indirect discharging facilities in this subcategory) to model the costs and pollutant loads reduction for a direct discharging facility. Because direct dischargers are more likely to have treatment in place, EPA provided the model facility with treatment in place equivalent to Option 1. Based on this model facility, EPA estimated that annualized compliance costs per facility for Option 2 will be $41,000 (1996 dollars) less than Option 4, and Option 2 will remove only 83 pound-equivalents less than Option 4. The Agency concluded that the additional costs of Option 4 do not justify the additional pollutant removals achieved for direct dischargers in this subcategory. Therefore, EPA determined that Option 2 is the "best available" technology economically achievable for the Non-Chromium Anodizing Subcategory.

14.3.4 BAT Technology Selection for the Printed Wiring Board Subcategory

The Agency proposes establishing BAT equivalent to BPT for toxic and nonconventional pollutants for the Printed Wiring Board Subcategory. EPA estimates that no facilities will close as a result of BAT based on Option 2. Therefore, the Agency found this option to be economically achievable. Additionally, the Agency believes that Option 2 represents the "best available" technology as it achieves a high level of pollutant control, treating all priority pollutants to very low levels, often at or near the analytical minimum level.

EPA evaluated BPT Option 4 as a basis for establishing BAT more stringent than the BPT level of control being proposed. As was the case for BAT based on Option 2, EPA estimates that no facilities will close as a result of BAT based on Option 4. Therefore, EPA considers Option 4 to be economically achievable for this subcategory. However, EPA is not proposing to establish BAT limitations based on Option 4 because it determined that Option 2 achieves nearly equivalent reductions in pound-equivalents for much less cost. By selecting Option 2 as the basis for BAT, EPA reduced annualized compliance costs by $2 million (1996 dollars) while only losing 3 percent of the toxic pound-equivalents that would be removed under Option 4. The Agency concluded that the additional costs of Option 4 do not justify the lack of significant additional pollutant removals achieved for direct dischargers in this subcategory. Therefore, EPA determined that Option 2 is the "best available" technology economically achievable for the Printed Wiring Board Subcategory.

14.3.5 BAT Technology Selection for the Steel Forming and Finishing Subcategory

The Agency proposes establishing BAT equivalent to BPT for toxic and nonconventional pollutants for the Steel Forming and Finishing Subcategory. EPA estimates that no facilities will close as a result of BAT based on Option 2. Therefore, the Agency found this option to be economically achievable. Additionally, the Agency believes that Option 2

represents the "best available" technology as it achieves a high level of pollutant control, treating all priority pollutants to very low levels, often at or near the analytical minimum level.

EPA evaluated transferring technology reflected in BPT Option 4 as a basis for establishing BAT more stringent than the BPT level of control being proposed. EPA is not proposing to establish BAT limitations based on Option 4 because it determined that Option 2 achieves nearly equivalent reductions in pound-equivalents for much less cost. By selecting Option 2 as the basis for BAT, EPA reduced annualized compliance costs by $2.6 million (1996 dollars) while only losing 3 percent of the toxic pound-equivalents that would be removed under Option 4. The Agency concluded that the additional costs of Option 4 do not justify the insignificant additional pollutant removals achieved for direct dischargers in this subcategory.

14.3.6 BAT Technology Selection for the Oily Wastes Subcategory

EPA has not identified any more stringent economically achievable treatment technology option that it considered to represent BAT level of control applicable to Oily Wastes Subcategory facilities. Therefore, the Agency is proposing to establish BAT equivalent to BPT for toxic and nonconventional pollutants for the Oily Wastes Subcategory. EPA estimates that no facilities will close as a result of BAT based on Option 6. Additionally, the Agency believes that Option 6 represents the "best available" technology as it achieves a high level of pollutant control, treating all priority pollutants to very low levels, often at or near the analytical minimum level.

EPA evaluated BPT Option 8 (ultrafiltration) as a basis for establishing BAT more stringent than the BPT level of control being proposed. As was the case for BAT based on Option 6, EPA estimates that no facilities would close as a result of BAT based on Option 8. Therefore, EPA does consider Option 8 to be economically achievable for this subcategory. However, based on the available data base, EPA is not proposing to establish BAT limitations based on Option 8 because it removes fewer pound-equivalents than Option 6. Therefore, the Agency determined that Option 6 is the "best available" technology economically achievable for the removal of priority pollutants from wastewater generated at Oily Wastes Subcategory facilities.

14.3.7 BAT Technology Selection for the Railroad Line Maintenance Subcategory

EPA is not proposing to establish BAT regulations for the Railroad Line Maintenance Subcategory. The Agency concluded that the facilities in this subcategory discharge very few pounds of toxic pollutants. EPA estimates that 34 railroad line maintenance facilities discharge 1,100 pound-equivalents per year to surface waters, or about 32 pound-equivalents per year per facility. The Agency based the loadings calculations on EPA sampling data, which found very few priority toxic pollutants at treatable levels in raw wastewater. Therefore, nationally-applicable regulations are unnecessary at this time and direct dischargers will remain subject to permit limitations for toxic and nonconventional pollutants established on a case-by-case basis using best professional judgement.

14.3.8 BAT Technology Selection for the Shipbuilding Dry Dock Subcategory

EPA is not proposing to establish BAT regulations for the Shipbuilding Dry Dock Subcategory because of the small number of facilities in this subcategory. EPA estimates there are six shipbuilding facilities operating one or more dry docks in the U.S. that discharge directly to surface waters. EPA determined that nationally applicable regulations are unnecessary at this time because of the small number of facilities in this subcategory. The Agency believes that limitations established on a case-by-case basis using best professional judgement can more appropriately address individual toxic and nonconventional pollutants that may be present at these six facilities.

14.4 Pretreatment Standards for Existing Sources (PSES)

Indirect dischargers in the MP&M industrial category, like the direct dischargers, use raw materials that contain many priority pollutant and nonconventional metal pollutants. These indirect discharging facilities may discharge many of these pollutants to POTWs at significant mass or concentration levels, or both. EPA estimates that indirect discharging facilities annually discharge approximately 125 million pounds of priority and nonconventional metals, and 47 million pounds of priority and nonconventional organic pollutants.

Unlike direct dischargers whose wastewater will receive no further treatment once it leaves the facility, indirect dischargers send their wastewater to POTWs for further treatment (unless there is a bypass, upset, or sewer overflow). EPA establishes pretreatment standards for those BAT pollutants that pass through POTWs. Therefore, for indirect dischargers, before proposing pretreatment standards, EPA examines whether the pollutants discharged by the industry "pass through" POTWs to waters of the U.S. or interfere with POTW operations or sludge disposal practices on a national basis. Generally, to determine if pollutants pass through POTWs, EPA compares the percentage of the pollutant removed by well-operated POTWs achieving secondary treatment with the percentage of the pollutant removed by facilities meeting BAT effluent limitations. In this manner, EPA can ensure that the combined treatment at indirect discharging facilities and POTWs is at least equivalent to that obtained through treatment by direct dischargers.

This approach to the definition of pass-through satisfies two competing objectives set by Congress: (1) that standards for indirect dischargers be equivalent to standards for direct dischargers, and (2) that the treatment capability and performance of POTWs be recognized and taken into account in regulating the discharge of pollutants from indirect dischargers. Rather than compare the mass or concentration of pollutants discharged by POTWs with the mass or concentration of pollutants discharged by BAT facilities, EPA compares the percentage of the pollutants removed by BAT facilities to the POTW removals. EPA takes this approach because a comparison of the mass or concentration of pollutants in POTW effluents with pollutants in BAT facility effluents would not take into account the mass of pollutants discharged to the POTW from other industrial and nonindustrial sources, nor the dilution of the pollutants in the POTW to

lower concentrations from the addition of large amounts of other industrial and nonindustrial water.

The primary source of the POTW percent removal data is the Fate of Priority Pollutants in Publicly Owned Treatment Works (EPA 440/1-82/303, September 1982), commonly referred to as the "50-POTW Study." This study presents data on the performance of 50 well-operated POTWs that employ secondary biological treatment in removing pollutants. Each sample was analyzed for three conventional, 16 nonconventional, and 126 priority toxic pollutants.

Section 7.0 discusses the results of the POTW pass-through analysis for indirect dischargers for each subcategory. The appendix to Section 7.0 discusses additional revisions that the Agency is considering to the editing criteria applied to the 50-POTW database.

14.4.1 Overview of Options and Low-Flow Exclusions

Indirect discharging MP&M facilities generate wastewater with similar pollutant characteristics to direct discharging facilities. Therefore, in evaluating technology options for PSES, EPA considered the same 10 treatment technologies discussed previously for BPT and BAT. However, as described below, along with the technology options, EPA also evaluated "low flow" exclusions for indirect discharging facilities.

For each subcategory, EPA evaluated various low-flow exclusions (also referred to as "flow cutoffs") for indirect dischargers. The Agency considered several factors in determining what flow level, if any, is appropriate for excluding facilities from compliance with pretreatment standards. For several of the subcategories, EPA considered the local control authorities' increased burden associated with the development of new permits or other control mechanisms for MP&M facilities. For some subcategories, the Agency considered flow exclusions as a way to reduce economic impacts. The Economic, Environmental, and Benefits Analysis of the Proposed Metal Products & Machinery Rule [EPA-821-B-00-0058] discusses job losses. EPA also considered the amount of pollutants (in pound-equivalents) discharged per year by the subcategory and by each of the facilities on an average annual basis in conjunction with the costs of regulation, to identify an appropriate level for an exclusion. In cases where EPA selected an option that also specifies a flow cutoff, it means that facilities with annual wastewater flow below the cutoff would not be subject to the MP&M categorical pretreatment standards. These facilities would remain subject to the general pretreatment regulation at 40 CFR 403. Some of these options would require excluded facilities to remain covered by categorical pretreatment standards under 40 CFR 413 (Electroplating) and 40 CFR 433 (Metal Finishing). In addition, some indirect discharging facilities in the General Metals Subcategory that discharge less than 1 MGY will remain covered by the pretreatment standards in 40 CFR 433. EPA is not proposing pretreatment standards for the Non-Chromium Anodizing Subcategory. Therefore, all indirect discharging facilities in this subcategory will remain subject to the applicable pretreatment standards in 40 CFR 413 or 40 CFR 433.

Table 14-12 summarizes the pounds of pollutants removed by the proposed options for indirect dischargers in each subcategory, and Table 14-13 summarizes the costs and economic impacts associated with the proposed options for indirect dischargers in each subcategory with proposed standards. EPA is not proposing pretreatment standards for the Non-Chromium Anodizing, Railroad Line Maintenance, and Shipbuilding Dry Dock Subcategories for the reasons described later in this section. (See Section 14.1 for summary tables for direct dischargers). Section 10.0 describes EPA's data editing procedures and statistical methodology for calculating the proposed effluent limits.

Table 14-12

Annual Pounds of Pollutants Removed by the Proposed PSES Option for Indirect Dischargers by Subcategory

Subcategory (Number of Facilities)	Selected Option (Flow Cutoff)	Priority and Nonconventional Metals (lbs-removed/yr)	Priority and Nonconventional Organics (lbs-removed/yr)	Cyanide (lbs-removed/yr)
General Metals (3,055)	Option 2 (1 MGY)	28.1 million	7.7 million	284,000
Metal Finishing Job Shops (1,514)	Option 2	2.4 million	47,000	1 million
Printed Wiring Boards (621)	Option 2	2.6 million	14,000	230,000
Steel Forming and Finishing (110)	Option 2	617,000	16,000	181
Oily Waste (226)	Option 6 (2 MGY)	191,000	1.1 million	0

Table 14-13

Annual Costs and Economic Impacts of the Proposed PSES Option for Indirect Dischargers by Subcategory

Subcategory (Number of Facilities)	Selected Option (Flow Cutoff)	Annualized Compliance Costs for Selected Option (1996 $)	Economic Impacts (Facility Closures) of Selected Option (Percentage of Regulated Subcategory[a])
General Metals (3,055)	Option 2 (1 MGY)	1.57 billion	24 (<1%)
Metal Finishing Job Shops (1,514)	Option 2	178 million	128 (10%)
Printed Wiring Boards (621)	Option 2	147 million	7 (1%)
Steel Forming and Finishing (110)	Option 2	24 million	6 (6%)
Oily Waste (226)	Option 6 (2 MGY)	10 million	14 (<1%)

[a] Baseline closures will not be regulated and, therefore, are not included when estimating the percentage of regulatory closures (% regulatory closures = the regulatory closures/all facilities in subcategory excluding baseline closures).

14.4.2 PSES for General Metals Subcategory

As discussed in Section 14.4, one of the factors that EPA uses to determine the need for pretreatment standards is whether the pollutants discharged by an industry pass through a POTW. The Agency only applied the pass-through analysis to pollutants that it selected for regulation under BAT. For the General Metals Subcategory, EPA determined that 13 pollutants pass through; therefore, EPA proposes pretreatment standards equivalent to BAT for these pollutants. In addition, EPA is proposing a standard for total sulfide based on potential POTW interference or upset associated with discharges of total sulfide from MP&M facilities. EPA is also proposing standards for TOC and TOP as part of a compliance alternative for organic pollutant discharges. (See Section 7 for a more detailed discussion of the pass-through analysis).

As discussed in Section 14.4.1, in the Agency's engineering assessment of the best available technology for pretreatment of wastewater from the General Metals Subcategory, EPA considered the same technology options for PSES as it did for BAT with the additional consideration of a flow cutoff. The Agency selected BAT Option 2 with a 1 MGY flow cutoff for PSES. EPA selected Option 2 for many of the same reasons it selected that option for BPT and BAT (See Sections 14.1.1 and 14.3.1) and provides additional rationale below.

EPA determined that Option 2 represented the best available technology and that Option 2 with a 1 MGY flow cutoff was economically achievable and greatly reduced the burden on POTWs. This option results in 24 facility closures (less than 1 percent of the indirect discharging General Metals Subcategory population). Additionally, the Agency believes that Option 2 represents the "best available" technology as it achieves a high level of pollutant control, treating all priority pollutants to very low levels, often at or near the analytical minimum level. Approximately 15 percent of the indirect discharging facilities in the General Metals Subcategory employ chemical precipitation followed by a sedimentation (Option 2) while 1 percent employ microfiltration after chemical precipitation (Option 4).

EPA did evaluate Option 4 with a 1 MGY flow cutoff as a basis for establishing PSES. EPA estimates that the economic impact due to the additional controls at Option 4 levels would result in 92 facility closures (less than 1 percent of the indirect dischargers in this subcategory). While EPA does not have a bright line for determining what level of impact is economically achievable for the industry as a whole, EPA looked for a breakpoint that would mitigate adverse economic impacts without greatly affecting the toxic pound-equivalents being removed under the proposed rule. By selecting Option 2 as PSES, EPA was able to reduce facility closures by more than two-thirds, while losing only a little over one percent of the toxic pound-equivalents from control under Option 4. The Agency concluded that the additional facility closures associated with Option 4 do not justify the insignificant additional pollutant removals achieved for indirect dischargers in this subcategory.

Considering the large number of indirect dischargers in the General Metals Subcategory that have the potential to be covered by this proposed regulation, an important issue to the affected industry and to permit writers is the potentially enormous administrative burden associated with issuing permits or other control mechanisms for all of these facilities. Therefore, in developing this proposal, EPA has looked for means of reducing the administrative burden, monitoring requirements, and reporting requirements. To meet this end, the Agency is proposing a 1 MGY flow cutoff for the General Metals Subcategory. Under this proposed option, facilities in the General Metals Subcategory that discharge greater than 1 MGY of MP&M process wastewater would be subject to the proposed categorical pretreatment standards. Facilities in the General Metals Subcategory that discharge 1 MGY or less would not be subject to MP&M PSES requirements. However, some of the facilities in this subcategory discharging under 1 MGY are currently covered by 40 CFR 433, Metal Finishing PSES or PSNS, and would remain subject to those pretreatment standards and the general pretreatment standards at 40 CFR 403.

The Agency determined that the 1 MGY flow cutoff was appropriate for the General Metals Subcategory based on several factors. First, and the most important factor, was the overall size of the General Metals Subcategory. EPA estimates that there are over 26,000 indirect discharging facilities in the General Metals Subcategory, of which 74 percent are not currently regulated by nationally established effluent guidelines. Establishing an MP&M pretreatment standard for all 26,000 facilities would greatly increase the number of permits or other control mechanisms for which local authorities are currently responsible (EPA estimates that there are approximately 30,000 control mechanisms today). EPA concluded that this

increased permit burden was not reasonable and therefore explored potential flow cutoffs as a way to reduce the impact on POTW permitting authorities.

Second, EPA is proposing the 1 MGY flow cutoff for this subcategory based in part on the small number of pound-equivalents that would be removed by facilities with annual wastewater flows less than or equal to 1 MGY. EPA determined that 89 percent of the indirect discharging facilities in the General Metals Subcategory discharge less than or equal to 1 MGY, yet these facilities are responsible for less than 6 percent of the total pound-equivalents currently discharged. If the Agency proposed pretreatment standards for facilities in the General Metals Subcategory that discharged less than or equal to 1 MGY, it estimates average removals of only 22 pound-equivalents per facility per year for those facilities. EPA recently decided not to promulgate pretreatment standards for two industrial categories, Industrial Laundries (64 FR 45072) and Landfills (65 FR 3008), based on low removals of toxic pound-equivalents by facilities in those categories. In the Industrial Laundries rule, EPA decided not to promulgate pretreatment standards based on 32 toxic pound-equivalents per facility per year, and, in the landfills effluent guidelines, EPA decided not to promulgate pretreatment standards for nonhazardous landfills based on the removal of only 14 toxic pound-equivalents per facility per year. In both instances, the Agency considered that the small additional removals that would be achieved through regulation did not warrant adoption of national categorical standards.

The Agency concluded that regulation of facilities discharging only 22 pound-equivalents per year was not justified by the additional permitting burden associated with these facilities. Although this decision is based upon a subset of small facilities, and not an entire subcategory as was done before, EPA believes this approach would allow control authorities to focus their efforts on the facilities discharging the vast majority of the pollutants, rather than dissipating their limited resources on sites contributing much less to the overall problem. EPA acknowledges that this may create an economic advantage for the smaller facilities, and solicited comment in the proposal on this exclusion.

EPA also closely evaluated Option 2 with a 2 MGY flow cutoff for the General Metals Subcategory. The Agency is not proposing this option because it does not reduce the number of facility closures (24) or significantly reduce the burden on control authorities. There is also a significant number of pound-equivalents associated with facilities discharging between 1 and 2 MGY. EPA determined that only 3 percent more of the facilities in this subcategory discharge between 1 and 2 MGY. This small number of facilities accounts for an additional 13 percent of the annual pollutant discharge load (in pound-equivalents). If EPA proposed Option 2 with a 2 MGY flow cutoff, the economic impacts would not be reduced. Based on these considerations, EPA is not proposing the 2 MGY flow cutoff for the General Metals Subcategory. EPA concluded that the 1 MGY flow cutoff was the most appropriate option in terms of balancing POTW burden reduction with pollutant removals and mitigating economic impacts. Table 14-12 shows the pounds of pollutants removed by the proposed option; Table 14-13 summarizes the costs and economic impacts associated with the proposed option. Table 14-14 lists the proposed PSES for the General Metals Subcategory. Where these General Metals facilities discharge less than or equal to 1 MGY to a POTW, these proposed pretreatment

standards do not apply; however, facilities are still subject to other applicable pretreatment standards, including those established under parts 413 and 433. Section 10.0 describes EPA's data editing procedures and statistical methodology for calculating the proposed effluent limitations.

Except at facilities where the process wastewater introduced into a POTW does not exceed 1 MGY, any existing indirect discharging facility in the General Metals Subcategory must achieve the following pretreatment standards.

Table 14-14

PSES for the General Metals Subcategory

Regulated Parameter		Maximum Daily (mg/L (ppm))	Maximum Monthly Avg. (mg/L (ppm))
1.	Total Organic Carbon (TOC) (as indicator)	87	50
2.	Total Organics Parameter (TOP)	9.09.0	4.34.3
3.	Cadmium	0.14	0.09
4.	Chromium	0.25	0.14
5.	Copper	0.55	0.28
6.	Total Cyanide	0.21	0.13
7.	Amenable Cyanide	0.14	0.07
8.	Lead	0.04	0.03
9.	Manganese	0.13	0.09
10.	Molybdenum	0.79	0.49
11.	Nickel	0.50	0.31
12.	Silver	0.22	0.09
13.	Sulfide, Total	31	13
14.	Tin	1.4	0.67
15.	Zinc	0.38	0.22

As discussed in Section 15.2.7, upon agreement with the permitting authority, facilities with cyanide treatment have the option of achieving the limitation for either total or amenable cyanide. Additionally, upon agreement with the permitting authority, facilities must choose to monitor for TOP or TOC, or implement a management plan for organic chemicals as specified in Section 15.2.7. A POTW has the option of imposing mass-based standards in place of the concentration based standards. To convert to mass-based standards, multiply each parameter's concentration-based standard times the average daily flow of process wastewater discharged by the source into the POTW.

14.4.3 PSES for the Metal Finishing Job Shops Subcategory

As discussed in Section 14.4, one of the factors that EPA uses to determine the need for pretreatment standards is whether the pollutants discharged by an industry pass through a POTW. The Agency only applies the pass-through analysis to pollutants that it selected for regulation under BAT. For the Metal Finishing Job Shops Subcategory, EPA determined that 12 pollutants pass through; therefore, EPA is proposing pretreatment standards equivalent to BAT for these pollutants. In addition, EPA is proposing a standard for total sulfide based on potential POTW interference or upset associated with discharges of total sulfide from MP&M facilities. EPA is also proposing standards for TOC and TOP as part of a compliance alternative for organic pollutant discharges. (See Section 7 for a more detailed discussion of the pass-through analysis).

As discussed in Section 14.4.1, in the Agency's engineering assessment of the best available technology for pretreatment of wastewater from the Metal Finishing Job Shops Subcategory, EPA considered the same technology options for PSES as it did for BAT with the additional consideration of a flow cutoff. The Agency selected BAT Option 2 for PSES for many of the same reasons it selected that option for BPT and BAT (See Section 14.1.2 and 14.3.2) and provides additional rationale below. EPA is proposing that pretreatment standards based on Option 2 be applied to all facilities (i.e., no flow exclusion) for the Metal Finishing Job Shops Subcategory.

The Agency estimates that 1,514 Metal Finishing Job Shops currently discharge MP&M process wastewater to POTWs. The Agency projects that 128 of these facilities (10 percent of the indirect discharging facilities when baseline closures are taken into consideration) might close as a result of the proposed option. EPA concluded that this level of impact was economically achievable for the subcategory as a whole but, in an effort to minimize the impacts, considered several flow exemptions and compliance alternatives.

The Agency believes that Option 2 represents the “best available” technology as it achieves a high level of pollutant control, treating all priority pollutants to very low levels, often at or near the analytical minimum level. Approximately 55 percent of the indirect discharging facilities in the Metal Finishing Job Shops Subcategory employ chemical precipitation followed by a sedimentation (Option 2) while less than 1 percent employ microfiltration after chemical precipitation (Option 4).

EPA did evaluate Option 4 as a basis for establishing PSES. EPA estimates that the economic impact due to the additional controls at Option 4 levels would result in 393 facility closures (32 percent of the indirect discharging facilities in this subcategory). Thus, EPA rejected Option 4 as not economically achievable.

The Agency evaluated Option 2 with several levels of flow cutoffs, compliance options, and various combinations of the two. EPA analyzed the cutoffs and alternative compliance options in terms of reduction in economic impacts and quantity of toxic pound-

equivalents discharged to the environment. EPA did not consider the reduction in POTW burden for this subcategory, unlike the General Metals Subcategory, because EPA has already established PSES for all of the facilities in this subcategory under 40 CFR 413 and 40 CFR 433, and local control authorities would not have to develop entirely new permits (or other control mechanisms) for these facilities.

EPA did consider alternatives. First, EPA analyzed a 1 MGY flow cutoff, which would exclude 831 of the 1,514 estimated Metal Finishing Job Shops facilities (or 457 of the 1,231 facilities after baseline closures are removed from the analysis), and would reduce the economic impacts for 23 of the 128 facilities EPA projected would close under Option 2. This represents less than 2 percent of the 1,231 metal finishing jobs that operate in the baseline and 18 percent of the projected facility closures under Option 2. This means that there are still 105 of the 128 facilities that EPA predicts to close with a 1 MGY flow cutoff. Further, EPA determined that the proposed regulation would control an average of 135 pound-equivalents per year from facilities discharging less than 1 MGY. This is higher than the level at which EPA has previously determined that discharges are not significant enough to warrant national regulation. Facilities discharging less than 1 MGY are associated with removals under the proposed option of about 61,000 pound-equivalents (or about 3 percent of the removals associated with the proposed option) at an incremental cost-effectiveness of about $300 per pound-equivalent (1981 dollars). This is higher than has generally been associated with pretreatment standards in the past, though not necessarily higher than has been associated with the smaller facilities regulated with pretreatment standards in the past. This is to be expected since smaller facilities incur the same level of costs for monitoring as larger facilities and are sometimes forced to purchase larger capacity treatment units than they would need due to availability. Nonetheless, the Agency concluded that the pollutant reductions associated with Option 2 were feasible and achievable and the economic impacts were not substantially mitigated under the 1 MGY flow cutoff, so a 1 MGY flow cutoff is not being proposed for the Metal Finishing Job Shops Subcategory.

Second, EPA considered an option with (a) MP&M pretreatment standards for facilities discharging greater than 1 MGY and (b) a pollution prevention alternative for those discharging less than 1 MGY. Under this option, EPA would exclude from the MP&M numeric pretreatment standards based on Option 2 those metal finishing job shops discharging less than 1 MGY that choose to perform the pollution prevention and water conservation activities discussed in the Appendix to this section (referred to as the “P2 alternative”). EPA would require the low flow facilities to continue to meet the pretreatment standards codified at 40 CFR Part 433, which remain unchanged by this proposed rule. All facilities discharging greater than 1 MGY (and those facilities discharging less than 1 MGY but not choosing the P2 alternative) would be subject to the MP&M pretreatment standards for this subcategory. In analyzing this option, EPA assumed that all facilities discharging less than 1 MGY chose the P2 alternative. EPA’s analysis shows that this option would reduce the facility closures for 23 of the 128 facilities EPA projected would close under Option 2 (no flow cutoff). As with the 1 MGY flow cutoff approach discussed above, this represents less than 2 percent of the 1,231 metal finishing job shops that operate in the baseline and about 18 percent of the closures projected by the proposed option. Further, although the P2 alternative would be somewhat effective in reducing toxic discharges,

the option is not as protective as the numeric pretreatment standards based on Option 2. For facilities discharging less than 1 MGY, EPA estimates that the P2 alternative would control 59 pound-equivalents per facility per year (compared to 135 pound-equivalents per facility at Option 2). Thus, EPA is not proposing the option of a 1 MGY flow cutoff combined with a P2 alternative for the proposed rule.

Third, EPA analyzed a 2 MGY flow cutoff, which would exclude 1,024 facilities (66 percent) from MP&M pretreatment standards. Excluding a larger number of facilities (compared to the 1 MGY cutoff option) resulted in a smaller number of facility closures. For this option, EPA predicts that 59 facilities (approximately 5 percent of the indirect discharging facilities) might close. EPA estimates that the facilities discharging less than 2 MGY represent less than 12 percent of the total pound-equivalents currently discharged by facilities in this subcategory. For facilities discharging less than 2 MGY, EPA estimates that pretreatment standards would remove an average of 189 pound-equivalents per facility per year. While a 2 MGY flow cutoff reduces the number of facility closures, EPA concluded that the pollutant reductions associated with Option 2 were feasible and achievable and is not proposing a 2 MGY flow cutoff.

Fourth, EPA analyzed the 2 MGY flow cutoff with the P2 alternative for those facilities below the cutoff. Under this option, EPA would exclude from the MP&M numeric pretreatment standards based on Option 2 those metal finishing job shops discharging less than 2 MGY that choose to perform the P2 alternative. EPA would require the low-flow facilities to continue to meet the pretreatment standards codified at 40 CFR Part 433, which remain unchanged by this proposed rule. All facilities discharging greater than 2 MGY (and those facilities discharging less than 2 MGY but not choosing the P2 alternative) would be subject to the MP&M pretreatment standards for this subcategory. In analyzing this option, EPA assumed that all facilities discharging less than 2 MGY chose the P2 alternative. EPA's analysis shows that this option may not reduce the number of facility closures any further than a 1 MGY flow cutoff (or 1 MGY P2 alternative). The model facilities representing the facilities that close with flows of 2 MGY or less would require annualized costs to be reduced at least 68 percent in order to avoid closure. Since there are some compliance costs associated with implementing the practices of the P2 alternative, EPA estimates that these may close under the P2 alternative. Although the P2 alternative reduces the number of facility closures as compared to an option with no flow cutoff, the option is not as protective as numeric pretreatment standards based on Option 2. For facilities discharging less than 2 MGY, EPA estimates that the P2 alternative would control an average of 67 pound-equivalents per facility per year (compared to 189 pound-equivalents per facility at Option 2). Thus, EPA is not proposing the option of 2 MGY flow cutoff combined with a P2 alternative.

In summary, for all of the flow cutoff and P2 alternatives that EPA considered for this subcategory, the Agency identified no combination that would significantly reduce the economic impacts without also significantly reducing control of pollutants. At all the flow cutoffs and compliance alternatives, EPA concluded that the potential removals the Agency would be choosing to forego were above levels which EPA has previously determined

insufficient to warrant national categorical pretreatment standards. Thus, EPA is not proposing a flow cutoff for this subcategory. Under the proposed option all facilities in this subcategory would be subject to the pretreatment standards, which would reduce pass-through of pollutants based on a technology EPA has determined to be technologically feasible and economically achievable.

The Appendix to this section discusses the P2 alternative. Table 14-12 shows the pounds of pollutants removed by the proposed option; Table 14-13 summarizes the costs and economic impacts associated with the proposed option. Table 14-15 lists PSES for the Metal Finishing Job Shops Subcategory. Section 10.0 describes EPA's data editing procedures and statistical methodology for calculating the proposed effluent limits.

Existing indirect discharging facilities in the Metal Finishing Job Shops Subcategory must achieve the following pretreatment standards.

Table 14-15

PSES for the Metal Finishing Job Shops Subcategory

Regulated Parameter		Maximum Daily (mg/L (ppm))	Maximum Monthly Avg. (mg/L (ppm))
1.	Total Organic Carbon (TOC) (as indicator)	78	59
2.	Total Organics Parameter (TOP)	9.0	4.3
3.	Cadmium	0.21	0.09
4.	Chromium	1.3	0.55
5.	Copper	1.3	0.57
6.	Total Cyanide	0.21	0.13
7.	Amenable Cyanide	0.14	0.07
8.	Lead	0.12	0.09
9.	Manganese	0.25	0.10
10.	Molybdenum	0.79	0.49
11.	Nickel	1.5	0.64
12.	Silver	0.15	0.06
13.	Sulfide, Total	31	13
14.	Tin	1.8	1.4
15.	Zinc	0.35	0.17

As discussed in Section 15.2.7, upon agreement with the permitting authority, facilities with cyanide treatment have the option of achieving the limitation for either total or amenable cyanide. Additionally, upon agreement with the permitting authority, facilities must choose to monitor for TOP or TOC, or implement a management plan for organic chemicals as specified in Section 15.2.7. A POTW has the option of imposing mass-based standards in place of the concentration-based standards. To convert to mass-based standards, multiply each parameter's concentration-based standard by the average daily flow of process wastewater discharged by the source into the POTW.

14.4.4 PSES for the Non-Chromium Anodizing Subcategory

EPA is proposing to not establish PSES for the Non-Chromium Anodizing Subcategory based on the economic impacts associated with Option 2 and the small quantity of toxic pollutants discharged by facilities in this subcategory remaining covered at an economically achievable flow cutoff. EPA determined that 60 percent of the indirect discharging facilities in this subcategory would close as a result of complying with Option 2 based standards. Pretreatment standards for this subcategory based on either Option 2 or Option 4 would require facilities to remove large quantities of aluminum, a metal that is beneficial to POTWs because it assists in the flocculation of wastewater prior to sedimentation. Aluminum anodizers use a large quantity of water in their anodizing processes and produce a wastewater that contains mostly aluminum. If the Agency proposed pretreatment standards for this subcategory, even without regulating aluminum, the standards would require facilities to install very large treatment systems (because of their high flow volume) and would remove large quantities of aluminum in order to remove small quantities of other metals such as nickel, zinc, and manganese. Therefore, EPA determined that the benefits of the aluminum discharge to POTWs outweighed the benefits gained from the removal of small quantities of other metals. In addition, because EPA has already promulgated pretreatment standards for non-chromium anodizers at 40 CFR 413 and 433, there is already a level of control for the small quantities of other metals being discharged along with the aluminum. Facilities subject to this subcategory must still comply with applicable PSES limitations (either 40 CFR 413 or 40 CFR 433). (See 40 CFR 438.40(b).)

14.4.5 PSES for the Printed Wiring Board Subcategory

As discussed above in Section 14.4.1, one of the factors that EPA uses to determine the need for pretreatment standards is whether the pollutants discharged by an industry pass through a POTW. The Agency only applies the pass-through analysis to pollutants that it selected for regulation under BAT. For the Printed Wiring Board Subcategory, EPA determined that nine pollutants pass through; therefore, EPA is proposing pretreatment standards equivalent to BAT for these pollutants. In addition, EPA is proposing a standard for total sulfide based on potential POTW interference or upset associated with discharges of total sulfide from MP&M facilities. EPA is also proposing standards for TOC and TOP as part of a compliance alternative for organic pollutant discharges. (See Section 7 for a more detailed discussion of the pass-through analysis).

As discussed in Section 14.4.1, in the Agency's engineering assessment of the best available technology for pretreatment of wastewater from the Printed Wiring Board Subcategory, EPA considered the same technology options for PSES as it did for BAT with the additional consideration of a flow cutoff exclusion. The Agency selected Option 2 for PSES for many of the same reasons it selected that option for BPT and BAT (see Sections 14.1.4 and 14.3.4) and provides additional rationale below. EPA also determined that pretreatment standards based on Option 2 for all facilities (i.e., no flow exclusion) are appropriate for the Printed Wiring Board Subcategory. The Agency estimates that 621 printed wiring board facilities currently discharge MP&M process wastewater to POTWs. The Agency projects that seven of these facilities (1 percent of the current indirect discharging population) might close as a result of the MP&M regulation. EPA concluded that this level of impact was economically achievable for the subcategory as a whole, but in an effort to minimize the impacts and/or maintain existing limitations for facilities where potential removals may not be sufficient to warrant national regulation, considered flow exemptions and compliance alternatives.

The Agency believes that Option 2 represents the “best available” technology as it achieves a high level of pollutant control, treating all priority pollutants to very low levels, often at or near the analytical minimum level. Approximately 80 percent of the indirect discharging facilities in the Printed Wiring Board Subcategory employ chemical precipitation followed by sedimentation (Option 2), while 2 percent employ microfiltration after chemical precipitation (Option 4).

EPA did evaluate Option 4 as a basis for establishing PSES. EPA estimates that the economic impact due to the additional controls at Option 4 levels would result in 18 more facility closures than Option 2 (total of 25 closures). EPA does consider Option 4 to be economically achievable for this subcategory. However, EPA is not proposing to establish PSES limitations based on Option 4 because it determined that Option 2 achieves nearly equivalent reductions in pound-equivalents for much less cost. By selecting Option 2 as the basis for PSES, EPA reduced annualized compliance costs by $75 million (1996 dollars) while only losing 0.5 percent of the toxic pound-equivalents that would be removed under Option 4. The Agency concluded that the additional costs of Option 4 do not justify the additional insignificant amount of pollutant removals achieved for indirect dischargers in this subcategory. Therefore, EPA determined that Option 2 is the “best available” technology economically achievable for the Printed Wiring Board Subcategory.

Although EPA concluded that the level of economic impact associated with Option 2 with no flow cutoff was economically achievable, it considered flow exclusions in an effort to minimize the impacts and/or maintain existing limitations for facilities where potential removals may not be significant enough to warrant national regulation. EPA did not consider the reduction in POTW burden for this subcategory, unlike the General Metals Subcategory, because EPA has already established PSES for all of the facilities in this subcategory under 40 CFR 413 and 433, and local control authorities would not have to develop entirely new permits (or other control mechanisms) for these facilities. EPA analyzed a 1 MGY flow cutoff, which would exclude 85 facilities, but would not reduce economic impacts. The same seven facilities that

EPA predicted to close with no flow cutoff are also expected to close with a 1 MGY flow cutoff. EPA determined that the proposed regulation would remove a total of less than 500 pound-equivalents from the facilities discharging less than 1 MGY (after removing baseline closures from the analysis), or less than 10 pound-equivalents per facility. The incremental removals beyond current regulations is very small for facilities less than 1 MGY, and therefore EPA will consider the 1 MGY cutoff at final. However, the Agency concluded that the significant pollutant reductions associated with Option 2 were feasible and achievable, the economic impacts were not mitigated at a 1 MGY flow cutoff for this subcategory and POTW burden would not be reduced with a flow cutoff, and thus is not proposing a 1 MGY flow cutoff for this subcategory. Table 14-12 shows the pounds of pollutants removed by the proposed option; Table 14-13 summarizes the costs and economic impacts associated with the proposed option. Table 14-16 lists PSES for the Printed Wiring Board Subcategory. Section 10.0 describes EPA's data editing procedures and statistical methodology for calculating the proposed effluent limits for this subcategory.

Existing indirect discharging facilities in the Printed Wiring Board Subcategory must achieve the following pretreatment standards.

Table 14-16

PSES for the Printed Wiring Board Subcategory

Regulated Parameter		Maximum Daily (mg/L (ppm))	Maximum Monthly Avg. (mg/L (ppm))
1.	Total Organic Carbon (TOC) (as indicator)	101	67
2.	Total Organics Parameter (TOP)	9.0	4.3
3.	Chromium	0.25	0.14
4.	Copper	0.55	0.28
5.	Total Cyanide	0.21	0.13
6.	Amenable Cyanide	0.14	0.07
7.	Lead	0.04	0.03
8.	Manganese	1.3	0.64
9.	Nickel	0.30	0.14
10.	Sulfide, Total	31	13
11.	Tin	0.31	0.14
12.	Zinc	0.38	0.22

As discussed in Section 15.2.7, upon agreement with the permitting authority, facilities with cyanide treatment have the option of achieving the limitation for either total or

amenable cyanide. Upon agreement with the permitting authority, facilities must choose to monitor for TOP or TOC, or implement a management plan for organic chemicals as specified in Section 15.2.7. A POTW has the option of imposing mass-based standards in place of the concentration-based standards. To convert to mass-based standards, multiply each parameter's concentration-based standard by the average daily flow of process wastewater discharged by the source into the POTW.

14.4.6 PSES for the Steel Forming and Finishing Subcategory

As discussed above in Section 14.4, one of the factors that EPA uses to determine the need for pretreatment standards is whether the pollutants discharged by an industry pass through a POTW The Agency only applies the pass-through analysis to pollutants that it selected for regulation under BAT. For the Steel Forming and Finishing Subcategory, EPA determined that 13 pollutants pass through; therefore, EPA is proposing pretreatment standards equivalent to BAT for these pollutants. In addition, EPA is proposing a standard for total sulfide based on potential POTW interference or upset associated with discharges of total sulfide from MP&M facilities. EPA is also proposing standards for TOC and TOP as part of a compliance alternative for organic pollutant discharges. (See Section 7 for a more detailed discussion of the pass-through analysis).

As discussed in Section 14.4.1 above, in the Agency's engineering assessment of the best available technology for pretreatment of wastewater from the Steel Forming and Finishing Subcategory, EPA considered the same technology options for PSES as it did for BAT with the additional consideration of a flow cutoff exclusion. The Agency selected Option 2 for PSES for many of the same reasons it selected that option for BPT and BAT (see Sections 14.1.5 and 14.3.5) and provides additional rationale below. EPA is proposing pretreatment standards based on Option 2 for all facilities (i.e., no flow exclusion) for the Steel Forming and Finishing Subcategory.

The Agency estimates that 110 Steel Forming and Finishing facilities currently discharge MP&M process wastewater to POTWs. The Agency projects that six of these facilities (6 percent of the current indirect discharging population) might close as a result of the MP&M regulation. EPA concluded that this level of impact was economically achievable for the subcategory as a whole, but in an effort to minimize the impacts, considered flow exemptions and compliance alternatives.

The Agency believes that Option 2 represents the "best available" technology as it achieves a high level of pollutant control, treating all priority pollutants to very low levels, often at or near the analytical minimum level. Approximately 63 percent of the indirect discharging facilities in the Steel Forming and Finishing Subcategory employ chemical precipitation followed by sedimentation (Option 2), while no facilities employ microfiltration after chemical precipitation (Option 4).

EPA did evaluate Option 4 as a basis for establishing PSES. EPA estimates that the economic impact due to the additional controls at Option 4 levels would result in the same number of facility closures (six) as Option 2. Therefore, EPA does consider Option 4 to be economically achievable for this subcategory. However, EPA is not proposing to establish PSES limitations based on Option 4 because it determined that Option 2 achieves nearly equivalent reductions in pound-equivalents for much less cost. By selecting Option 2 as the basis for PSES, EPA reduced annualized compliance costs by $12 million (1996 dollars) while only losing 0.6 percent of the toxic pound-equivalents that would be removed under Option 4. The Agency concluded that the additional costs of Option 4 do not justify the additional insignificant pollutant removals achieved for indirect discharging facilities in this subcategory. Therefore, EPA determined that Option 2 is the "best available" technology economically achievable for the Steel Forming and Finishing Subcategory.

Although EPA concluded that the level of economic impact associated with Option 2 with no flow cutoff was economically achievable, it considered flow exclusions in an effort to minimize the impacts. EPA did not consider the reduction in POTW burden for this subcategory, unlike the General Metals subcategory, because EPA has already established PSES for all of the facilities in this subcategory under 40 CFR 420, and local control authorities would not have to develop entirely new permits (or other control mechanisms) for these facilities. However, to mitigate economic impacts (and or maintain existing limitations for facilities where potential removals may not be sufficient to warrant national regulation), EPA analyzed a 1 MGY flow cutoff, which would exclude 21 facilities (after accounting for baseline closures), and a 2 MGY flow cutoff which would exclude 30 facilities. Neither a 1 MGY flow cutoff nor a 2 MGY flow cutoff would reduce economic impacts. The same 6 facilities that EPA predicted to close with no flow cutoff are also expected to close with either a 1 or 2 MGY flow cutoff. However, a 1 MGY flow cutoff would eliminate less than 100 total pound-equivalents that would be removed under the proposed option, or less than 5 pound-pound-equivalents per excluded facility, while a 2 MGY flow cutoff would eliminate less than 200 pound-equivalents total, or less than 7 pound-equivalents per excluded facility. These incremental removals beyond current regulations are very small, and therefore EPA will consider the 1 and 2 MGY cutoffs at final. Although a 3 MGY flow cutoff would reduce projected economic impacts by half (3 projected closures instead of 6), it would eliminate 2,157 pound-equivalent removals, or about 58 pound-equivalents per facility. These incremental removals are nearly twice the removals (on a per facility basis) than would have been realized by regulating Industrial Laundry and Landfill facilities. Because EPA has concluded that the proposed option is feasible and achievable, and POTW burden would not be reduced with a flow cutoff, EPA is not proposing a flow cutoff for the Steel Forming and Finishing Subcategory.

EPA expresses the proposed effluent limitations guidelines and standards for BPT, BAT, NSPS, PSES, and PSNS for the Steel Forming and Finishing Subcategory as mass limitations in pounds/1,000 pounds of product. Permit writers and control authorities shall compute mass effluent limitations and pretreatment requirements for each forming/finishing operation by multiplying the average daily production rate (or other reasonable measure of production) by the respective effluent limitations guidelines or standards listed in Table 14-17.

Production-normalized flows for the Steel Forming and Finishing Subcategory are listed in Table 14-7. Permit writers and control authorities shall not include production from unit operations that do not generate or discharge process wastewater in the calculation of the operating rate. These mass-based limitations apply to the operations listed and defined in Section 14.1.5

Existing indirect discharging facilities in the Steel Forming and Finishing Subcategory must achieve the following pretreatment standards.

Table 14-17

PSES for the Steel Forming and Finishing Subcategory

Pollutant	TSS		O&G (as HEM)	
Forming/Finishing Operation	Maximum Daily (lbs/1000 lbs of product)	Maximum Monthly Avg. (lbs/1000 lbs of product)	Maximum Daily (lbs/1000 lbs of product)	Maximum Monthly Avg. (lbs/1000 lbs of product)
(a) Acid Pickling	0.0709	0.0369	0.0312	0.0239
(b) Alkaline Cleaning	0.0709	0.0369	0.0312	0.0239
(c) Cold Forming	0	0	0	0
(d) Continuous Annealing	0.00355	0.00184	0.00156	0.00120
(e) Electroplating	0.142	0.0737	0.0623	0.0478
(f) Hot Dip Coating	0.0206	0.0107	0.00903	0.00693
(g) Lubrication	0.00170	0.000884	0.000748	0.000574
(h) Mechanical Descaling	0.000284	0.000148	0.000125	0.0000956
(i) Painting	0.00922	0.00479	0.00405	0.00311
(j) Pressure Deformation	0.00355	0.00184	0.00156	0.00120

Pollutant	TOC		TOP	
Forming/Finishing Operation	Maximum Daily (lbs/1000 lbs of product)	Maximum Monthly Avg. (lbs/1000 lbs of product)	Maximum Daily (lbs/1000 lbs of product)	Maximum Monthly Avg. (lbs/1000 lbs of product)
(a) Acid Pickling	0.181	0.103	0.0188	0.00896
(b) Alkaline Cleaning	0.181	0.103	0.0188	0.00896
(c) Cold Forming	0	0	0	0

Table 14-17 (Continued)

Pollutant	TOC		TOP	
(d) Continuous Annealing	0.00901	0.00514	0.000937	0.000448
(e) Electroplating	0.361	0.206	0.0375	0.0180
(f) Hot Dip Coating	0.0523	0.0300	0.00543	0.00260
(g) Lubrication	0.00433	0.00247	0.000450	0.000215
(h) Mechanical Descaling	0.000721	0.000411	0.0000750	0.0000359
(i) Painting	0.0235	0.0134	0.00244	0.00117
(j) Pressure Deformation	0.00901	0.00514	0.000937	0.000448

Pollutant	Cadmium		Chromium	
Forming/Finishing Operation	Maximum Daily (lbs/1000 lbs of product)	Maximum Monthly Avg. (lbs/1000 lbs of product)	Maximum Daily (lbs/1000 lbs of product)	Maximum Monthly Avg. (lbs/1000 lbs of product)
(a) Acid Pickling	0.000292	0.000188	0.000509	0.000277
(b) Alkaline Cleaning	0.000292	0.000188	0.000509	0.000277
(c) Cold Forming	0	0	0	0
(d) Continuous Annealing	0.0000146	0.00000938	0.0000255	0.0000139
(e) Electroplating	0.000583	0.000376	0.00102	0.000553
(f) Hot Dip Coating	0.0000845	0.0000545	0.000148	0.0000801
(g) Lubrication	0.00000699	0.00000450	0.0000123	0.00000663
(h) Mechanical Descaling	0.00000116	0.00000075	0.00000204	0.00000110
(i) Painting	0.0000379	0.0000244	0.0000662	0.0000359
(j) Pressure Deformation	0.0000146	0.00000938	0.0000255	0.0000139

Table 14-17 (Continued)

Pollutant	Copper		Lead	
Forming/Finishing Operation	Maximum Daily (lbs/1000 lbs of product)	Maximum Monthly Avg. (lbs/1000 lbs of product)	Maximum Daily (lbs/1000 lbs of product)	Maximum Monthly Avg. (lbs/1000 lbs of product)
(a) Acid Pickling	0.00114	0.000565	0.0000737	0.0000522
(b) Alkaline Cleaning	0.00114	0.000565	0.0000737	0.0000522
(c) Cold Forming	0	0	0	0
(d) Continuous Annealing	0.0000570	0.0000283	0.00000368	0.00000261
(e) Electroplating	0.00228	0.00113	0.000148	0.000105
(f) Hot Dip Coating	0.000331	0.000164	0.0000214	0.0000152
(g) Lubrication	0.0000274	0.0000136	0.00000177	0.00000125
(h) Mechanical Descaling	0.00000455	0.00000226	0.00000029	0.00000021
(i) Painting	0.000148	0.0000734	0.00000957	0.00000678
(j) Pressure Deformation	0.0000570	0.0000283	0.00000368	0.00000261

Pollutant	Manganese		Molybdenum	
Forming/Finishing Operation	Maximum Daily (lbs/1000 lbs of product)	Maximum Monthly Avg. (lbs/1000 lbs of product)	Maximum Daily (lbs/1000 lbs of product)	Maximum Monthly Avg. (lbs/1000 lbs of product)
(a) Acid Pickling	0.000269	0.000183	0.00164	0.00103
(b) Alkaline Cleaning	0.000269	0.000183	0.00164	0.00103
(c) Cold Forming	0	0	0	0
(d) Continuous Annealing	0.0000135	0.00000914	0.0000820	0.0000511
(e) Electroplating	0.000537	0.000366	0.00328	0.00205
(f) Hot Dip Coating	0.0000779	0.0000531	0.000476	0.000297
(g) Lubrication	0.00000644	0.00000439	0.0000394	0.0000246
(h) Mechanical Descaling	0.00000107	0.00000073	0.00000656	0.00000409
(i) Painting	0.0000350	0.0000238	0.000214	0.000133

Table 14-17 (Continued)

Pollutant	Manganese		Molybdenum	
(j) Pressure Deformation	0.0000135	0.00000914	0.0000820	0.0000511

Pollutant	Nickel		Silver	
Forming/Finishing Operation	Maximum Daily (lbs/1000 lbs of product)	Maximum Monthly Avg. (lbs/1000 lbs of product)	Maximum Daily (lbs/1000 lbs of product)	Maximum Monthly Avg. (lbs/1000 lbs of product)
(a) Acid Pickling	0.00104	0.000642	0.000456	0.000187
(b) Alkaline Cleaning	0.00104	0.000642	0.000456	0.000187
(c) Cold Forming	0	0	0	0
(d) Continuous Annealing	0.0000520	0.0000321	0.0000228	0.00000934
(e) Electroplating	0.00208	0.00129	0.000912	0.000374
(f) Hot Dip Coating	0.000302	0.000186	0.000133	0.0000542
(g) Lubrication	0.0000250	0.0000154	0.0000110	0.00000448
(h) Mechanical Descaling	0.00000415	0.00000257	0.00000182	0.00000075
(i) Painting	0.000135	0.0000834	0.0000593	0.0000243
(j) Pressure Deformation	0.0000520	0.0000321	0.0000228	0.00000934

Pollutant	Sulfide (as S)		Tin	
Forming/Finishing Operation	Maximum Daily (lbs/1000 lbs of product)	Maximum Monthly Avg. (lbs/1000 lbs of product)	Maximum Daily (lbs/1000 lbs of product)	Maximum Monthly Avg. (lbs/1000 lbs of product)
(a) Acid Pickling	0.0630	0.0267	0.00274	0.00139
(b) Alkaline Cleaning	0.0630	0.0267	0.00274	0.00139
(c) Cold Forming	0	0	0	0
(d) Continuous Annealing	0.00315	0.00134	0.000137	0.0000694
(e) Electroplating	0.126	0.0534	0.00547	0.00278
(f) Hot Dip Coating	0.0183	0.00774	0.000793	0.000403

Table 14-17 (Continued)

(g) Lubrication	0.00151	0.000641	0.0000656	0.0000333
(h) Mechanical Descaling	0.000252	0.000107	0.0000110	0.00000555
(i) Painting	0.00818	0.00347	0.000356	0.000181
(j) Pressure Deformation	0.00315	0.00134	0.000137	0.0000694

Pollutant	**Zinc**	
Forming/Finishing Operation	**Maximum Daily (lbs/1000 lbs of product)**	**Maximum Monthly Avg. (lbs/1000 lbs of product)**
(a) Acid Pickling	0.000793	0.000456
(b) Alkaline Cleaning	0.000793	0.000456
(c) Cold Forming	0	0
(d) Continuous Annealing	0.0000397	0.0000228
(e) Electroplating	0.00159	0.000912
(f) Hot Dip Coating	0.000230	0.000133
(g) Lubrication	0.0000191	0.0000110
(h) Mechanical Descaling	0.00000317	0.00000182
(i) Painting	0.000103	0.0000593
(j) Pressure Deformation	0.0000397	0.0000228

Pollutant	**Cyanide (T)**		**Cyanide (A)**	
Forming/Finishing Operation	**Maximum Daily (lbs/1000 lbs of product)**	**Maximum Monthly Avg. (lbs/1000 lbs of product)**	**Maximum Daily (lbs/1000 lbs of product)**	**Maximum Monthly Avg. (lbs/1000 lbs of product)**
(a) Electroplating	0.000865	0.000513	0.000580	0.000282

As discussed Section 15.2.7, upon agreement with the permitting authority, facilities with cyanide treatment have the option of achieving the limitation for either amenable or total cyanide. Upon agreement with the permitting authority, facilities must choose to monitor for TOP or TOC, or implement a management plan for organic chemicals as specified in Section 15.2.7.

14.4.7 PSES for the Oily Wastes Subcategory

As discussed in Section 14.4, two of the factors that EPA uses to determine the need for pretreatment standards is whether the pollutants discharged by an industry pass through or interfere with a POTW. For the Oily Wastes Subcategory, EPA is proposing pretreatment standards equivalent to BAT for the following three pollutants or pollutant parameters: TOC, TOP and total sulfide. In addition, EPA is proposing a standard for total sulfide based on potential POTW interference or upset associated with discharges of total sulfide from MP&M facilities. EPA is also proposing standards for TOC and TOP as part of a compliance alternative for organic pollutant discharges. (See Section 7 for a more detailed discussion of the pass-through analysis).

As discussed in Section 14.4.1, in the Agency's engineering assessment of the best available technology for pretreatment of wastewater from the Oily Wastes Subcategory, EPA considered the same technology options for PSES as it did for BAT with the additional consideration of a flow cutoff exclusion. The Agency selected BAT Option 6 with a 2 MGY flow cutoff for PSES. The Agency selected Option 6 for PSES for many of the same reasons it selected that option for BPT and BAT (See Sections 14.1.6 and 14.3.6) and provides additional rationale below. EPA is proposing the 2 MGY flow cutoff primarily to reduce the burden on POTWs. In the proposal EPA solicits comments on a 3 MGY cutoff as a possible alternative to further reduce impacts.

EPA determined that Option 6 represented the best available technology and that Option 6 with a 2 MGY flow cutoff was economically achievable and greatly reduced the burden on POTWs. This option results in 14 facility closures (less than 1 percent of the indirect discharging Oily Wastes Subcategory population). Additionally, the Agency believes that Option 6 represents the “best available” technology as it achieves a high level of pollutant control, treating all priority pollutants to very low levels, often at or near the analytical minimum level. According to EPA’s detailed questionnaires, approximately 44 percent of the indirect discharging facilities in the Oily Wastes Subcategory employ oil/water separation by chemical emulsion breaking followed by gravity separation and oil skimming (Option 6), while no facilities employ ultrafiltration (Option 8).

EPA did evaluate BPT Option 8 with a 2 MGY flow cutoff as a basis for establishing PSES more stringent than the BAT level of control being proposed today. EPA estimates that the economic impact due to the additional controls at Option 8 levels would result in the same number of facility closures (14) as Option 6. Therefore, EPA does consider Option 8 to be economically achievable for this subcategory. However, based on the available data base, EPA is not proposing to establish PSES limitations based on Option 8 because it removes fewer pound-equivalents than Option 6. Therefore, the Agency determined that Option 6 is the “best available” technology economically achievable for the removal of priority pollutants from wastewater generated at Oily Wastes Subcategory facilities.

Considering the large number of indirect dischargers that have the potential to be covered by this proposed regulation, an important issue to the affected industry and to permit writers is the potentially enormous administrative burden associated with issuing permits or other control mechanisms for all of these facilities. Therefore, in developing this proposal, EPA looked for means of reducing the administrative burden, monitoring requirements, and reporting requirements. To meet this end, the Agency is proposing a 2 MGY flow cutoff for the Oily Wastes Subcategory. Under this proposed option, facilities in the Oily Wastes Subcategory that discharge greater than 2 MGY per year of MP&M process wastewater would be subject to the proposed pretreatment standards. However, those facilities in the Oily Wastes Subcategory that discharge 2 MGY or less would not be subject to MP&M PSES requirements. These facilities would, however, remain subject to the existing general pretreatment standards at 40 CFR Part 403.

The Agency is proposing the 2 MGY flow cutoff exclusion for the Oily Wastes Subcategory based on several factors. First, and the most important factor, is the overall size of the subcategory. EPA estimates that there are approximately 28,500 indirect discharging facilities in the Oily Wastes Subcategory, of which over 99 percent are not currently regulated by categorical pretreatment standards. Establishing an MP&M pretreatment standard for all 28,500 facilities would nearly double the number of permits that local authorities are currently responsible for. EPA concluded that this increased permit burden was not reasonable given the projected loadings reductions and therefore explored potential flow cutoffs as a way to reduce the impact on POTW permitting authorities.

Second, EPA is proposing the 2 MGY flow cutoff for this subcategory based in part on the small number of pound-equivalents that would be removed by facilities with annual wastewater flows less than or equal to 2 MGY. EPA determined that after removing facilities that close in the baseline ("baseline closures") from the analysis, over 99 percent of the indirect discharging facilities in the Oily Wastes Subcategory discharge less than or equal to 2 MGY. EPA estimates average removals of only 2 pound-equivalents per facility per year for these facilities.

In addition, EPA determined that for those facilities in this subcategory that discharge between 1 and 2 MGY the MP&M regulation would remove an average of 31 pound-equivalents per year per facility. These reductions, as discussed previously, are lower than those projected for industrial laundries and landfills, for which EPA determined national regulation was not warranted. The Agency concluded that regulation of facilities discharging only 2 pound-equivalents per year (with those discharging between 1 and 2 MGY at 31 pound-equivalents per year) was not justified by the additional permitting burden associated with these facilities. EPA believes this approach would allow Control Authorities to focus their efforts on the facilities discharging the vast majority of the pollutants, rather than dissipating their limited resources on sites contributing much less to the overall problem. EPA does note, however, that the indirect discharging facilities that discharge less than or equal to 2 MGY are responsible for an estimated 78 percent of the total pound-equivalents currently discharged (approximately 51,000 of the 65,000 pound-equivalents discharged after removing baseline closures from the analysis).

EPA also closely evaluated Option 6 with a 3 MGY flow cutoff for the Oily Waste Subcategory. Based on EPA's data collection efforts, after removing facilities that close in the baseline ("baseline closures") from the analysis, over 99 percent of the indirect discharging facilities in the Oily Wastes Subcategory discharge less than or equal to 3 MGY. The Agency determined that after removing baseline closures from the analysis there are approximately 64 indirect discharge facilities in this subcategory between 2 and 3 MGY and that they discharge an average of 24 pound-equivalents per year per facility. If EPA proposed Option 2 with a 3 MGY flow cutoff, the economic impacts would decrease slightly (12 facility closures rather than 14 at the proposed option). The Agency concluded that the 3 MGY flow cutoff was not necessary to reduce POTW burden for the Oily Wastes Subcategory although it would reduce the economic impact somewhat. EPA notes that these approximately 28,160 facilities are responsible for an estimated 81 percent of the total pound-equivalents currently discharged (approximately 52,500 of the 65,000 pound-equivalents discharged after removing baseline closures from the analysis).

Therefore, EPA is proposing the 2 MGY flow cutoff but is also seriously considering a 3 MGY cutoff. EPA believes this approach would allow control authorities to focus their efforts on the facilities discharging the vast majority of the pollutants, rather than dissipating their limited resources on sites contributing much less to the overall problem. Table 14-12 shows the pounds of pollutants removed by the proposed option; Table 14-13 summarizes the costs and economic impacts associated with the proposed option. (Both tables include facilities that close in the baseline). EPA's methodology for identifying baseline closures is discussed in the EEBA.

Except at facilities where the process wastewater introduced into a POTW does not exceed 2 MGY, existing indirect discharging facilities in the Oily Wastes Subcategory must achieve the following pretreatment standards.

Table 14-18

PSES for the Oily Wastes Subcategory

	Regulated Parameter	Maximum Daily (mg/L (ppm))	Maximum Monthly Avg. (mg/L (ppm))
1.	Total Organic Carbon (TOC) (as indicator)	633	378
2.	Total Organics Parameter (TOP)	9.0	4.3
3.	Sulfide, Total	31	13

Upon agreement with the permitting authority, facilities must choose to monitor for TOP or TOC, or implement a management plan for organic chemicals as specified in Section 15.2.7. A POTW has the option of imposing mass-based standards in place of the concentration-

based standards. To convert to mass-based standards, multiply each parameter's concentration-based standard by the average daily flow of process wastewater discharged by the source into the POTW.

14.4.8 PSES for the Railroad Line Maintenance Subcategory

EPA is proposing not to establish PSES for the Railroad Line Maintenance Subcategory based on the small quantity of toxic pollutants discharged by facilities in this subcategory. The Agency estimates that there are 799 indirect discharging railroad line maintenance facilities that currently discharge 1,800 pound-equivalents per year to the nation's waters (taking into account removals at the POTW), or just over 2 pound-equivalents per facility per year. Based on this analysis, EPA preliminarily concluded that there is no need to develop nationally applicable regulations for this subcategory due to the low levels of pollutants discharged by facilities in this subcategory.

14.4.9 PSES for the Shipbuilding Dry Dock Subcategory

EPA is proposing not to establish PSES for the Shipbuilding Dry Dock Subcategory based on the small number of facilities in this subcategory and on the small quantity of toxic pollutants removed by the technology options evaluated by EPA for this proposal. The Agency estimates that there are six indirect discharging facilities that have one or more dry docks that currently discharge 852 pound-equivalents per year to the nation's waters (taking into account removals at the POTW). On a national basis, Option 8 (ultrafiltration + P2) removed less than 1 pound-equivalent per year, while Option 10 (DAF plus P2) removed only 26 pound-equivalents per year (or less than 5 pound-equivalents removed per facility per year). The Agency estimates that all of these facilities currently have DAF treatment in place. EPA determined that nationally applicable regulations are unnecessary at this time because of the small number of facilities in this subcategory and based on the small amount of toxic pounds removed by the technology options evaluated by the Agency. EPA believes that pretreatment local limits implemented on a case-by-case basis can more appropriately address any individual toxic parameters present at these six facilities.

14.5 New Source Performance Standards (NSPS)

New facilities have the opportunity to incorporate the best available demonstrated technologies including process changes, in-plant controls, and end-of-pipe treatment technologies. The same technologies discussed previously for BAT and PSES are available as the basis for NSPS. Since new sites have the potential to install pollution prevention and pollution control technologies more cost effectively then existing sources, EPA strongly considered the more advanced treatment options for NSPS. The Agency discusses its analysis of these more stringent options for NSPS on a subcategory-by-subcategory basis below.

14.5.1 NSPS for the General Metals Subcategory

EPA expects that new facilities in the General Metals Subcategory will discharge similar quantities of the same pollutants that existing sources discharge. Therefore, the need for NSPS regulation is the same as the need for BPT regulation. (See Section 14.1.1.)

EPA proposes NSPS for this subcategory based on BAT Option 4. The Agency determined that Option 4 is the best available demonstrated technology for the removal of pollutants in this subcategory. EPA's analytical data shows that Option 4 is capable of achieving much lower long-term averages than Option 2 for several of the metal pollutants of concern. In addition, EPA's data shows that microfiltration greatly reduces the variability in the concentration of the metal pollutants in the treatment effluent. Although Option 4 costs $54,500 (1996 dollars) more than Option 2 annually for a new facility with a wastewater flow of 1.1 MGY (the wastewater flow for a representative direct discharging facility in the General Metals Subcategory), EPA is proposing Option 4 because of the lower levels of metal pollutants in the wastewater effluent. EPA noted in the discussion of its consideration of this technology for BPT/BAT that it is not being proposed for BPT because the additional removals, while large when considered across the entire population of existing facilities, were not significant on a per facility basis, and because of concerns with potential increased loadings (relative to Option 2) of COD and organic pollutants.

The Agency also strongly considered proposing NSPS based on ultrafiltration for oil and grease removal and chemical precipitation followed by sedimentation for TSS and metals removal. This option is equivalent to BAT Option 2 with the oil/water separator replaced by an ultrafilter. Section 10.0 describes EPA's data editing procedures and statistical methodology for calculating the proposed NSPS limitations for this subcategory.

The Agency also performed an economic analysis to determine if Option 4 presented a barrier to entry for new facilities in the General Metals Subcategory. EPA determined that the cost of compliance with NSPS based on Option 4 would make up only 0.04 percent of a new facility's projected revenues. Therefore, EPA concluded that NSPS based on Option 4 would not create a barrier to entry.

New direct discharging facilities in the General Metals Subcategory must achieve must following performance standards. Discharges must remain within the pH range 6 to 9 and must not exceed the following.

Table 14-19

NSPS for the General Metals Subcategory

Regulated Parameter		Maximum Daily (mg/L (ppm))	Maximum Monthly Avg. (mg/L (ppm))
1.	Total Suspended Solids (TSS)	28	18
2.	Oil and Grease (as HEM)	15	12
3.	Total Organic Carbon (TOC) (as indicator)	87	50
4.	Total Organics Parameter (TOP)	9.0	4.3
5.	Cadmium	0.02	0.01
6.	Chromium	0.17	0.07
7.	Copper	0.44	0.16
8.	Total Cyanide	0.21	0.13
9.	Amenable Cyanide	0.14	0.07
10.	Lead	0.04	0.03
11.	Manganese	0.29	0.18
12.	Molybdenum	0.79	0.49
13.	Nickel	1.9	0.75
14.	Silver	0.05	0.03
15.	Sulfide, Total	31	13
16.	Tin	0.03	0.03
17.	Zinc	0.08	0.06

As discussed in Section 15.2.7, upon agreement with the permitting authority, facilities with cyanide treatment have the option of achieving the limitation for either total or amenable cyanide. Upon agreement with the permitting authority, facilities must choose to monitor for TOP or TOC, or implement a management plan for organic chemicals as specified in Section 15.2.7.

14.5.2 NSPS for the Metal Finishing Job Shops Subcategory

EPA expects that new facilities in the Metal Finishing Job Shops Subcategory will discharge similar quantities of the same pollutants that existing sources discharge. Therefore, the need for NSPS regulation is the same as the need for BPT regulation. (See Section 14.1.2.)

EPA is proposing NSPS for this subcategory based on BAT Option 4. The Agency determined that Option 4 is the best available demonstrated technology for the removal of pollutants in this subcategory. EPA's analytical data shows that Option 4 is capable of achieving much lower long-term averages than Option 2 for several of the metal pollutants of concern. In addition, EPA's data shows that microfiltration greatly reduces the variability in the

concentration of the metal pollutants in the treatment effluent. Although Option 4 costs $72,500 (1996 dollars) more than Option 2 annually for a new facility with a wastewater flow of 6.0 MGY (the wastewater flow for a representative direct discharging facility in the Metal Finishing Job Shops Subcategory), EPA is proposing Option 4 because of the lower levels of metal pollutants in the treated wastewater effluent. EPA is not proposing Option 4 for BPT for this subcategory because of the lack of significant overall pollutant removals achieved, and the fact that it removes less COD, oil and grease, and organic pollutants.

The Agency also strongly considered proposing NSPS based on ultrafiltration for oil and grease removal and chemical precipitation followed by sedimentation for TSS and metals removal. This option is equivalent to BAT Option 2 with the oil/water separator replaced by an ultrafilter. Section 10.0 describes EPA's data editing procedures and statistical methodology for calculating the proposed NSPS limitations.

The Agency also performed an economic analysis in order to determine if Option 4 presented a barrier to entry for new facilities in the Metal Finishing Subcategory. EPA determined that the cost of compliance with NSPS based on Option 4 would make up only 1.41 percent of a new facility's projected revenues. Therefore, EPA concluded that NSPS based on Option 4 would not create a barrier to entry.

New direct discharging facilities in the Metal Finishing Job Shops Subcategory must achieve the following performance standards. Discharges must remain within the pH range 6 to 9 and must not exceed the following.

Table 14-20

NSPS for the Metal Finishing Job Shops Subcategory

Regulated Parameter		Maximum Daily (mg/L (ppm))	Maximum Monthly Avg. (mg/L (ppm))
1.	Total Suspended Solids (TSS)	28	18
2.	Oil and Grease (as HEM)	15	12
3.	Total Organic Carbon (TOC) (as indicator)	78	59
4.	Total Organics Parameter (TOP)	9.0	4.3
5.	Cadmium	0.02	0.01
6.	Chromium	0.17	0.07
7.	Copper	0.44	0.16
8.	Total Cyanide	0.21	0.13
9.	Amenable Cyanide	0.14	0.07
10.	Lead	0.04	0.03
11.	Manganese	0.29	0.18
12.	Molybdenum	0.79	0.49
13.	Nickel	1.9	0.75
14.	Silver	0.05	0.03
15.	Sulfide, Total	31	13
16.	Tin	0.03	0.03
17.	Zinc	0.08	0.06

As discussed in Section 15.2.7, upon agreement with the permitting authority, facilities with cyanide treatment have the option of achieving the limitation for either amenable or total cyanide. Upon agreement with the permitting authority, facilities must choose to monitor for TOP or TOC, or implement a management plan for organic chemicals as specified in Section 15.2.7.

14.5.3 NSPS for the Non-Chromium Anodizing Subcategory

EPA expects that new facilities in the Non-Chromium Anodizing Subcategory will discharge similar quantities of the same pollutants that existing sources discharge. EPA notes that it did not identify any existing direct dischargers in this subcategory and that estimates of costs and pollutant loadings were transferred from the best performing indirect dischargers in this subcategory. Therefore, the need for NSPS regulation is the same as the need for BPT regulation. (See Section 14.1.3.).

EPA is proposing NSPS for this subcategory based on BAT Option 2. As discussed in the BPT analysis for this subcategory, non-chromium anodizers discharge large quantities of aluminum but have very low levels of other metals in their wastewater. EPA determined that Option 2 is capable of removing most of the aluminum discharged by facilities in this subcategory and that any additional removals achieved by Option 4 are not justified by the additional cost.

The Agency also evaluated not proposing NSPS for facilities in this subcategory and instead continuing to require compliance with NSPS limitations established under 40 CFR Part 433. However, the Agency has tentatively rejected this option because these new proposed NSPS limitations require an increased removal of TSS, and the Agency feels that the pollutants proposed for regulation here are more appropriate for the non-chromium anodizing industry. The NSPS limitations established in 40 CFR Part 433 require facilities to meet an average monthly discharge of 31 mg/L of TSS and allow for a maximum daily discharge of 60 mg/L. These proposed new source MP&M limitations require non-chromium anodizers to meet an average monthly discharge for TSS of 22 mg/L and allow for a monthly maximum discharge of 52 mg/L. EPA believes that the costs associated with NSPS are justified by the additional removal of TSS from this subcategory. In addition, 40 CFR Part 433 requires non-chromium anodizers to meet effluent limitations for seven metal pollutants. EPA's data show that these seven metals are present only in very small quantities at non-chromium anodizing facilities. In 40 CFR Part 433, EPA did not establish a limit for aluminum, the metal found in the largest quantity in non-chromium anodizers' wastewater. The Agency has determined that direct discharging facilities in the Non-Chromium Anodizing Subcategory should have a limit for aluminum and thus is proposing to cover them here. The Agency notes that this will reduce the number of pollutants that non-chromium anodizers would have to monitor for.

A barrier-to-entry analysis is typically performed for new facilities by using existing facilities as a model. However, there are no existing direct dischargers in this subcategory. Therefore, the Agency could not perform an economic analysis to determine if Option 2 presented a barrier to entry for new facilities in the Non-Chromium Anodizing Subcategory.

New direct discharging facilities in the Non-Chromium Anodizing Subcategory must achieve the following performance standards. Discharges must remain within the pH range of 6 to 9 and must not exceed the following.

Table 14-21

NSPS for the Non-Chromium Anodizing Subcategory

	Regulated Parameter	Maximum Daily (mg/L (ppm))	Maximum Monthly Avg. (mg/L (ppm))
1.	TSS	52	22
2.	O&G (as HEM)	15	12
3.	Aluminum	8.2	4.0
4.	Manganese	0.13	0.09
5.	Nickel	0.50	0.31
6.	Zinc	0.38	0.22

14.5.4 NSPS for the Printed Wiring Board Subcategory

EPA expects that new facilities in the Printed Wiring Board Subcategory will discharge similar quantities of the same pollutants that existing sources discharge. Therefore, the need for NSPS regulation is the same as the need for BPT regulation. (See Section 14.1.4).

EPA is proposing NSPS for this subcategory based on BAT Option 4. The Agency determined that Option 4 is the best available demonstrated technology for the removal of pollutants in this subcategory. EPA's analytical data shows that Option 4 is capable of achieving much lower long-term averages than Option 2 for several of the metal pollutants of concern. In addition, EPA's data shows that microfiltration greatly reduces the variability in the concentration of the metal pollutants in the treatment effluent. Although Option 4 costs $162,000 more than Option 2 annually for a new facility with a wastewater flow of 25.5 MGY (the wastewater flow for a representative direct discharging facility in the Printed Wiring Board Subcategory), EPA is proposing Option 4 because of the lower levels of metal pollutants in the wastewater effluent. EPA is not proposing Option 4 for BPT/BAT because of the lack of significant overall additional removals and the fact that it removes less COD, oil and grease, and organic pollutants, relative to Option 2.

The Agency also strongly considered proposing NSPS based on ultrafiltration for oil and grease removal and chemical precipitation followed by sedimentation for TSS and metals removal. This option is equivalent to BAT Option 2 with the oil/water separator replaced by an ultrafilter.

The Agency also performed an economic analysis to determine if Option 4 presented a barrier to entry for new facilities in the Printed Wiring Board Subcategory. EPA determined that the cost of compliance with NSPS based on Option 4 would make up only 0.02 percent of a new facility's projected revenues. Therefore, EPA concluded that NSPS based on Option 4 would not create a barrier to entry.

Section 10.0 describes EPA's data editing procedures and statistical methodology for calculating the proposed NSPS limitations for this subcategory. Table 14-22 lists the proposed NSPS effluent limitations for the Printed Wiring Board Subcategory.

New direct discharging facilities in the Printed Wiring Board Subcategory must achieve the following performance standards. Discharges must remain within the pH range 6 to 9 and must not exceed the following.

Table 14-22

NSPS for the Printed Wiring Board Subcategory

Regulated Parameter		Maximum Daily (mg/L (ppm))	Maximum Monthly Avg. (mg/L (ppm))
1.	Total Suspended Solids (TSS)	28	18
2.	Oil and Grease (as HEM)	15	12
3.	Total Organic Carbon (TOC) (as indicator)	101	67
4.	Total Organics Parameter (TOP)	9.09.0	4.34.3
5.	Chromium	0.17	0.07
6.	Copper	0.01	0.01
7.	Total Cyanide	0.21	0.13
8.	Amenable Cyanide	0.14	0.07
9.	Lead	0.04	0.03
10.	Manganese	0.29	0.18
11.	Nickel	1.9	0.75
12.	Sulfide, Total	31	13
13.	Tin	0.09	0.07
14.	Zinc	0.08	0.06

As discussed in Section 15.2.7, upon agreement with the permitting authority, facilities with cyanide treatment have the option of achieving the limitation for either amenable or total cyanide. Also upon agreement with the permitting authority, facilities must choose to monitor for TOP or TOC, or implement a management plan for organic chemicals as specified in Section 15.2.765.

14.5.5 NSPS for the Steel Forming and Finishing Subcategory

EPA expects that new facilities in the Steel Forming and Finishing Subcategory will discharge similar quantities of the same pollutants that existing sources discharge.

Therefore, the need for NSPS regulation is the same as the need for BPT regulation. (See Section 14.1.5.)

EPA is proposing NSPS for this subcategory based on BAT Option 4. The Agency determined that Option 4 is the best available demonstrated technology for the removal of pollutants in this subcategory. EPA's analytical data shows that Option 4 is capable of achieving much lower long-term averages than Option 2 for several of the metal pollutants of concern. In addition, EPA's data shows that microfiltration greatly reduces the variability in the concentration of the metal pollutants in the treatment effluent. Although Option 4 costs $42,400 more than Option 2 annually for a new facility with a wastewater flow of 18.4 MGY (the wastewater flow for a representative direct discharging facilities in the Steel Forming and Finishing Subcategory), EPA determined that the additional cost of Option 4 is justified by the lower levels of metal pollutants in the wastewater effluent.

The Agency also strongly considered proposing NSPS based on ultrafiltration for oil and grease removal and chemical precipitation followed by a clarifier for TSS and metals removal. This option is equivalent to BAT Option 2 with the oil/water separator replaced by an ultrafilter.

The Agency also performed an economic analysis to determine if Option 4 presented a barrier to entry for new facilities in the Steel Forming and Finishing Subcategory. EPA determined that the cost of compliance with NSPS based on Option 4 would make up only 0.14 percent of a new facility's projected revenues. Therefore, EPA concluded that NSPS based on Option 4 would not create a barrier to entry.

Section 10.0 describes EPA's data editing procedures and statistical methodology for calculating the proposed NSPS limitations for this subcategory. Table 14-23 lists the proposed NSPS effluent limitations for the Steel Forming and Finishing Subcategory.

EPA expresses the proposed effluent limitations guidelines and standards for BPT, BAT, NSPS, PSES, and PSNS for the Steel Forming and Finishing Subcategory as mass limitations in pounds/1,000 pounds of product. Permit writers and control authorities shall compute mass effluent limitations and pretreatment requirements for each forming/finishing operation by multiplying the average daily production rate (or other reasonable measure of production) by the respective effluent limitations guidelines or standards listed in Table 14-23. Production-normalized flows for the Steel Forming and Finishing Subcategory are listed in Table 14-7. Permit writers and control authorities shall not include production from unit operations that do not generate or discharge process wastewater in the calculation of the operating rate. These mass-based limitations apply to the operations listed and defined in Section 14.1.5

New direct discharging facilities in the Steel Forming and Finishing Subcategory must achieve the following performance standards. Discharges must remain within the pH range 6 to 9 and must not exceed the following.

Table 14-23

NSPS for the Steel Forming and Finishing Subcategory

Pollutant	TSS		O&G (as HEM)	
Forming/Finishing Operation	Maximum Daily (lbs/1000 lbs of product)	Maximum Monthly Avg. (lbs/1000 lbs of product)	Maximum Daily (lbs/1000 lbs of product)	Maximum Monthly Avg. (lbs/1000 lbs of product)
(a) Acid Pickling	0.0571	0.0358	0.0312	0.0239
(b) Alkaline Cleaning	0.0571	0.0358	0.0312	0.0239
(c) Cold Forming	0	0	0	0
(d) Continuous Annealing	0.00286	0.00179	0.00156	0.00120
(e) Electroplating	0.115	0.0716	0.0623	0.00478
(f) Hot Dip Coating	0.0166	0.0104	0.00903	0.00693
(g) Lubrication	0.00137	0.000859	0.000748	0.000574
(h) Mechanical Descaling	0.000229	0.000144	0.000125	0.0000956
(i) Painting	0.00743	0.00466	0.00405	0.00311
(j) Pressure Deformation	0.00286	0.00179	0.00156	0.00120

Pollutant	TOC		TOP	
Forming/Finishing Operation	Maximum Daily (lbs/1000 lbs of product)	Maximum Monthly Avg. (lbs/1000 lbs of product)	Maximum Daily (lbs/1000 lbs of product)	Maximum Monthly Avg. (lbs/1000 lbs of product)
(a) Acid Pickling	0.181	0.103	0.0188	0.00896
(b) Alkaline Cleaning	0.181	0.103	0.0188	0.00896
(c) Cold Forming	0	0	0	0
(d) Continuous Annealing	0.00901	0.00514	0.000937	0.000448
(e) Electroplating	0.361	0.206	0.0375	0.0180
(f) Hot Dip Coating	0.0523	0.0298	0.00543	0.00260
(g) Lubrication	0.00433	0.00247	0.000450	0.000215
(h) Mechanical Descaling	0.000721	0.000411	0.0000750	0.0000359
(i) Painting	0.0235	0.0134	0.00244	0.00117

Table 14-23 (Continued)

(j) Pressure Deformation	0.00901	0.00514	0.000937	0.000448

Pollutant	Cadmium		Chromium	
Forming/Finishing Operation	Maximum Daily (lbs/1000 lbs of product)	Maximum Monthly Avg. (lbs/1000 lbs of product)	Maximum Daily (lbs/1000 lbs of product)	Maximum Monthly Avg. (lbs/1000 lbs of product)
(a) Acid Pickling	0.0000267	0.0000184	0.000355	0.000143
(b) Alkaline Cleaning	0.0000267	0.0000184	0.000355	0.000143
(c) Cold Forming	0	0	0	0
(d) Continuous Annealing	0.00000133	0.00000092	0.0000178	0.00000714
(e) Electroplating	0.0000534	0.0000368	0.000710	0.000286
(f) Hot Dip Coating	0.00000773	0.00000533	0.000103	0.0000415
(g) Lubrication	0.00000064	0.00000044	0.00000851	0.00000343
(h) Mechanical Descaling	0.00000011	0.00000007	0.00000142	0.00000057
(i) Painting	0.00000347	0.00000239	0.0000461	0.0000186
(j) Pressure Deformation	0.00000133	0.00000092	0.0000178	0.00000714

Pollutant	Copper		Lead	
Forming/Finishing Operation	Maximum Daily (lbs/1000 lbs of product)	Maximum Monthly Avg. (lbs/1000 lbs of product)	Maximum Daily (lbs/1000 lbs of product)	Maximum Monthly Avg. (lbs/1000 lbs of product)
(a) Acid Pickling	0.000898	0.000327	0.0000692	0.0000517
(b) Alkaline Cleaning	0.000898	0.000327	0.0000692	0.0000517
(c) Cold Forming	0	0	0	0
(d) Continuous Annealing	0.0000449	0.0000164	0.00000346	0.00000258
(e) Electroplating	0.00180	0.000654	0.000139	0.000104
(f) Hot Dip Coating	0.000261	0.0000949	0.0000201	0.0000150
(g) Lubrication	0.0000216	0.00000785	0.00000166	0.00000124

Table 14-23 (Continued)

(h) Mechanical Descaling	0.00000359	0.00000131	0.00000028	0.00000021
(i) Painting	0.000117	0.0000425	0.00000899	0.00000671
(j) Pressure Deformation	0.0000449	0.0000164	0.00000346	0.00000258

Pollutant	**Manganese**		**Molybdenum**	
Forming/Finishing Operation	**Maximum Daily (lbs/1000 lbs of product)**	**Maximum Monthly Avg. (lbs/1000 lbs of product)**	**Maximum Daily (lbs/1000 lbs of product)**	**Maximum Monthly Avg. (lbs/1000 lbs of product)**
(a) Acid Pickling	0.000600	0.000364	0.00164	0.00103
(b) Alkaline Cleaning	0.000600	0.000364	0.00164	0.00103
(c) Cold Forming	0	0	0	0
(d) Continuous Annealing	0.0000300	0.0000182	0.0000820	0.0000511
(e) Electroplating	0.00120	0.000728	0.00328	0.00205
(f) Hot Dip Coating	0.000174	0.000106	0.000476	0.000297
(g) Lubrication	0.0000144	0.00000873	0.0000394	0.0000246
(h) Mechanical Descaling	0.00000240	0.00000146	0.00000656	0.00000409
(i) Painting	0.0000780	0.0000473	0.000214	0.000133
(j) Pressure Deformation	0.0000300	0.0000182	0.0000820	0.0000511

Pollutant	**Nickel**		**Silver**	
Forming/Finishing Operation	**Maximum Daily (lbs/1000 lbs of product)**	**Maximum Monthly Avg. (lbs/1000 lbs of product)**	**Maximum Daily (lbs/1000 lbs of product)**	**Maximum Monthly Avg. (lbs/1000 lbs of product)**
(a) Acid Pickling	0.00391	0.00156	0.0000955	0.0000582
(b) Alkaline Cleaning	0.00391	0.00156	0.0000955	0.0000582
(c) Cold Forming	0	0	0	0
(d) Continuous Annealing	0.000196	0.0000779	0.00000477	0.00000291
(e) Electroplating	0.00782	0.00312	0.000191	0.000117

Table 14-23 (Continued)

(f) Hot Dip Coating	0.00114	0.000452	0.0000277	0.0000169
(g) Lubrication	0.0000939	0.0000374	0.00000229	0.00000140
(h) Mechanical Descaling	0.0000157	0.00000623	0.00000038	0.00000023
(i) Painting	0.000509	0.000203	0.0000125	0.00000756
(j) Pressure Deformation	0.000196	0.0000779	0.00000477	0.00000291

Pollutant	**Sulfide (as S)**		**Tin**	
Forming/Finishing Operation	**Maximum Daily (lbs/1000 lbs of product)**	**Maximum Monthly Avg. (lbs/1000 lbs of product)**	**Maximum Daily (lbs/1000 lbs of product)**	**Maximum Monthly Avg. (lbs/1000 lbs of product)**
(a) Acid Pickling	0.0630	0.0267	0.0000606	0.0000453
(b) Alkaline Cleaning	0.0630	0.0267	0.0000606	0.0000453
(c) Cold Forming	0	0	0	0
(d) Continuous Annealing	0.00315	0.00134	0.00000303	0.00000226
(e) Electroplating	0.126	0.0534	0.000122	0.0000905
(f) Hot Dip Coating	0.0183	0.00774	0.0000176	0.0000132
(g) Lubrication	0.00151	0.000641	0.00000145	0.00000109
(h) Mechanical Descaling	0.000252	0.000107	0.00000024	0.00000018
(i) Painting	0.00818	0.00347	0.00000788	0.00000588
(j) Pressure Deformation	0.00315	0.00134	0.00000303	0.00000226

Pollutant	**Zinc**	
Forming/Finishing Operation	**Maximum Daily (lbs/1000 lbs of product)**	**Maximum Monthly Avg. (lbs/1000 lbs of product)**
(a) Acid Pickling	0.000163	0.000111
(b) Alkaline Cleaning	0.000163	0.000111
(c) Cold Forming	0	0
(d) Continuous Annealing	0.00000811	0.00000553
(e) Electroplating	0.000325	0.000222
(f) Hot Dip Coating	0.0000471	0.0000321
(g) Lubrication	0.00000389	0.00000265

Table 14-23 (Continued)

(h) Mechanical Descaling	0.00000065	0.00000044
(i) Painting	0.0000211	0.0000144
(j) Pressure Deformation	0.00000811	0.00000553

Pollutant	Cyanide (T)		Cyanide (A)	
Forming/Finishing Operation	Maximum Daily (lbs/1000 lbs of product)	Maximum Monthly Avg. (lbs/1000 lbs of product)	Maximum Daily (lbs/1000 lbs of product)	Maximum Monthly Avg. (lbs/1000 lbs of product)
(a) Electroplating	0.000865	0.000513	0.000580	0.000282

As discussed in Section 15.2.7, upon agreement with the permitting authority, facilities with cyanide treatment have the option of achieving the limitation for either total or amenable cyanide. Additionally, upon agreement with the permitting authority, facilities must choose to monitor for TOP or TOC, or implement a management plan for organic chemicals as specified in Section 15.2.7.

14.5.6 NSPS for the Oily Wastes Subcategory

EPA expects that new facilities in the Oily Wastes Subcategory will discharge similar quantities of the same pollutants that existing sources discharge. Therefore, the need for NSPS regulation is the same as the need for BPT regulation. (See Section 14.1.6.)

EPA is proposing NSPS for this subcategory based on BAT Option 6, oil/water separation by chemical emulsion breaking, gravity separation, and oil skimming. The Agency determined that Option 6 is the best available demonstrated technology for the removal of pollutants in this subcategory and is proposing this option for the same reasons it selected this option for BPT and BAT. (See Section 14.1.6.)

Since EPA is proposing to set NSPS equal to BAT (Option 6) and this option is determined to be economically achievable for these facilities under BAT, EPA concluded that NSPS based on Option 6 would not create a barrier to entry.

14.5.7 NSPS for the Railroad Line Maintenance Subcategory

EPA expects that new facilities in the Railroad Line Maintenance Subcategory will discharge similar quantities of the same pollutants that existing sources discharge. Therefore, the need for NSPS regulation is the same as the need for BPT regulation. (See Section 14.1.7.)

EPA is proposing NSPS for this subcategory based on BAT Option 10, DAF plus in-process flow control and pollution prevention. The Agency determined that Option 10 is the best available demonstrated technology for the removal of pollutants in this subcategory and is proposing this option for the same reasons it selected this option for BPT and BAT. (See Section 14.1.7.)

EPA notes that railroad line maintenance facilities do not have revenue reported at the facility level, and it is therefore not possible to compare costs as a percentage of facility revenue for new and existing facilities in this subcategory. In addition, EPA is proposing to set NSPS equal to BAT (Option 10) and has determined that this option is economically achievable for these facilities under BAT; therefore, EPA concluded that NSPS based on Option 10 would not create a barrier to entry.

14.5.8 NSPS for the Shipbuilding Dry Dock Subcategory

EPA expects that new facilities in the Shipbuilding Dry Dock Subcategory will discharge similar quantities of the same pollutants that existing sources discharge. Therefore, the need for NSPS regulation is the same as the need for BPT regulation. (See Section 14.1.8.)

EPA is proposing NSPS for this subcategory based on BAT Option 10, DAF plus in-process flow control and pollution prevention. The Agency determined that Option 10 is the best available demonstrated technology for the removal of pollutants in this subcategory and is proposing this option for the same reasons it selected this option for BPT. (See Section 14.1.8.)

Since EPA is proposing to set NSPS equal to BAT (Option 10) and has determined that this option is economically achievable for these facilities under BAT, EPA concluded that NSPS based on Option 10 would not create a barrier to entry.

14.6 Pretreatment Standards for New Sources (PSNS)

Section 307(c) of CWA calls for EPA to promulgate pretreatment standards for new sources (PSNS) at the same time that it promulgates NSPS. New facilities have the opportunity to incorporate the best available demonstrated technologies including process changes, in-plant controls, and end-of-pipe treatment technologies.

The same technologies discussed previously for BAT and PSES are available as the basis for PSNS. Since new sites have the potential to install pollution prevention and pollution control technologies more cost effectively then existing sources, EPA strongly considered the more advanced treatment options for PSNS. The Agency discusses its analysis of these more stringent options for PSNS on a subcategory-by-subcategory basis below.

14.6.1 PSNS for the General Metals Subcategory

EPA expects that new facilities in the General Metals Subcategory will discharge similar quantities of the same pollutants that existing sources discharge. Therefore, the need for PSNS regulation is the same as the need for PSES regulation. (See Section 14.4.2.) Section 7 discusses the pass-through analysis for new sources.

EPA proposes PSNS for this subcategory based on BAT Option 4 for the same reasons it is proposing this option for NSPS. EPA is also requesting comment on basing PSNS on Option 2, as with NSPS. In addition, EPA proposes a 1 MGY flow cutoff exclusion for PSNS. This is the same flow cutoff level that EPA is proposing for PSES for the existing indirect discharging facilities in the General Metals Subcategory. The Agency concluded that a 1 MGY flow cutoff is appropriate for new indirect discharging facilities in the General Metals Subcategory based on the potential POTW permitting burden that would be associated with developing and then maintaining permits for new sources with low flows, and the likelihood that these facilities discharge a small amount of pound-equivalents at these low flow rates. The Agency assumes that the pound-equivalents removed per facility for new facilities with flows below or equal to 1 MGY would be even lower than the 22 pound-equivalents per facility for similarly sized existing sources in this subcategory. The Agency concluded that a similar (or even smaller) amount of pollutant removal is not significant and does not justify regulation of these facilities by a national categorical regulation. EPA solicits comment on whether it is appropriate to exclude new sources that discharge process wastewater equal to 1 million gallons or less for the reasons described above.

The Agency also strongly considered proposing PSNS based on ultrafiltration for oil and grease removal and chemical precipitation followed by sedimentation for TSS and metals removal. This option is equivalent to BAT Option 2 with the oil/water separator replaced by an ultrafilter. The Agency is soliciting comment and data on this PSNS option for the final rule.

The Agency determined that the cost of compliance with PSNS based on Option 4 would make up only 0.09 percent of a new facility's projected revenues and concluded that this would not create a barrier to entry.

Table 14-24 lists the proposed PSNS effluent limitations for the General Metals Subcategory. Section 10.0 describes EPA's data editing procedures and statistical methodology for calculating the proposed effluent limits for this subcategory.

Except at facilities where the process wastewater introduced into a POTW does not exceed 1 MGY, new indirect discharging facilities in the General Metals Subcategory must achieve the following.

Table 14-24

PSNS for the General Metals Subcategory

Regulated Parameter		Maximum Daily (mg/L (ppm))	Maximum Monthly Avg. (mg/L (ppm))
1.	Total Organic Carbon (TOC) (as indicator)	87	50
2.	Total Organics Parameter (TOP)	9.0	4.3
3.	Cadmium	0.02	0.01
4.	Chromium	0.17	0.07
5.	Copper	0.44	0.16
6.	Total Cyanide	0.21	0.13
7.	Amenable Cyanide	0.14	0.07
8.	Lead	0.04	0.03
9.	Manganese	0.29	0.18
10.	Molybdenum	0.79	0.49
11.	Nickel	1.9	0.75
12.	Silver	0.05	0.03
13.	Sulfide, Total	31	13
14.	Tin	0.03	0.03
15.	Zinc	0.08	0.06

As discussed in Section 15.2.7, upon agreement with the permitting authority, facilities with cyanide treatment have the option of achieving the limitation for either total or amenable cyanide. Upon agreement with the permitting authority, facilities must choose to monitor for TOP or TOC, or implement a management plan for organic chemicals as specified in Section 15.2.7. A POTW has the option of imposing mass-based standards in place of the concentration-based standards. To convert to mass-based standards, multiply each parameter's concentration-based standard by the average daily flow of process wastewater discharged by the source into the POTW.

14.6.2 PSNS for the Metal Finishing Job Shops Subcategory

EPA expects that new facilities in the Metal Finishing Job Shops Subcategory will discharge similar quantities of the same pollutants that existing sources discharge. Therefore, the need for PSNS regulation is the same as the need for PSES regulation (See Section 14.4.3). Section 7 discussed the pass-through analysis for new sources.

EPA is proposing PSNS for this subcategory based on BAT Option 4 for the same reasons it is proposing this option for NSPS. EPA is also requesting comment on PSNS limits based on Option 2. In addition, EPA is not proposing a flow cutoff exclusion for PSNS for this subcategory for the same reasons that it did not propose a flow cutoff for PSES (See Section 14.4.3).

The Agency also strongly considered proposing PSNS based on ultrafiltration for oil and grease removal and chemical precipitation followed by sedimentation for TSS and metals removal. This option is equivalent to BAT Option 2 with the oil/water separator replaced by an ultrafilter.

The Agency determined that the cost of compliance with PSNS based on Option 4 would make up 4.64 percent of a new facility's projected revenues and expects that this would not create a barrier to entry. EPA notes that this is a higher percentage than for other subcategories.

Table 14-25 lists the proposed PSNS effluent limitations for the Metal Finishing Job Shops Subcategory. Section 10.0 describes EPA's data editing procedures and statistical methodology for calculating the proposed effluent limits for this subcategory.

New indirect discharging facilities in the Metal Finishing Job Shops Subcategory must achieve the following.

Table 14-25

PSNS for Metal Finishing Job Shops Subcategory

Regulated Parameter		Maximum Daily (mg/L (ppm))	Maximum Monthly Avg. (mg/L (ppm))
1.	Total Organic Carbon (TOC) (as indicator)	78	59
2.	Total Organics Parameter (TOP)	9.0	4.3
3.	Cadmium	0.02	0.01
4.	Chromium	0.17	0.07
5.	Copper	0.44	0.16
6.	Total Cyanide	0.21	0.13
7.	Amenable Cyanide	0.14	0.07
8.	Lead	0.04	0.03
9.	Manganese	0.29	0.18
10.	Molybdenum	0.79	0.49
11.	Nickel	1.9	0.75

Regulated Parameter		Maximum Daily (mg/L (ppm))	Maximum Monthly Avg. (mg/L (ppm))
12.	Silver	0.05	0.03
13.	Sulfide, Total	31	13
14.	Tin	0.03	0.03
15.	Zinc	0.08	0.06

As discussed in Section 15.2.7, upon agreement with the permitting authority, facilities with cyanide treatment have the option of achieving the limitation for either total or amenable cyanide. Upon agreement with the permitting authority, facilities must choose to monitor for TOP or TOC, or implement a management plan for organic chemicals as specified in Section 15.2.7. A POTW has the option of imposing mass-based standards in place of the concentration-based standards. To convert to mass-based standards, multiply each parameter's concentration-based standard by the average daily flow of process wastewater discharged by the source into the POTW.

14.6.3 PSNS for the Non-Chromium Anodizing Subcategory

EPA expects that new facilities in the Non-Chromium Anodizing Subcategory will discharge similar quantities of the same pollutants that existing sources discharge and therefore EPA is not proposing pretreatment standards for new sources for this subcategory for the same reasons it is not proposing PSNS for this subcategory. See Section 14.4.4.

14.6.4 PSNS for the Printed Wiring Board Subcategory

EPA expects that new facilities in the Printed Wiring Board Subcategory will discharge similar quantities of the same pollutants that existing sources discharge. Therefore, the need for PSNS regulation is the same as the need for PSES regulation (see Section 14.4.5). Section 7 discusses the pass-through analysis for new sources.

EPA is proposing PSNS for this subcategory based on BAT Option 4 for the same reasons it is proposing this option for NSPS. As was the case for PSES, EPA is not proposing a flow cutoff exclusion for this subcategory for the same reasons discussed in Section 14.4.5.

The Agency also strongly considered proposing PSNS based on ultrafiltration for oil and grease removal and chemical precipitation followed by sedimentation for TSS and metals removal. This option is equivalent to BAT Option 2 with the oil/water separator replaced by an ultrafilter.

The Agency determined that the cost of compliance with PSNS based on Option 4 would make up only 0.20 percent of a new facility's projected revenues and concluded that this would not create a barrier to entry.

Table 14-26 lists the proposed PSNS effluent limitations for the Printed Wiring Board Subcategory. Section 10.0 describes EPA's data editing procedures and statistical methodology for calculating the proposed effluent limits for this subcategory.

New indirect discharging facilities in the Printed Wiring Board Subcategory must achieve the following.

Table 14-26

PSNS for the Printed Wiring Board Subcategory

Regulated Parameter		Maximum Daily (mg/L (ppm))	Maximum Monthly Avg. (mg/L (ppm))
1.	Total Organic Carbon (TOC) (as indicator)	101	67
2.	Total Organics Parameter (TOP)	9.0	4.3
3.	Chromium	0.17	0.07
4.	Copper	0.01	0.01
5.	Total Cyanide	0.21	0.13
6.	Amenable Cyanide	0.14	0.07
7.	Lead	0.04	0.03
8.	Manganese	0.29	0.18
9.	Nickel	1.9	0.75
10.	Sulfide, Total	31	13
11.	Tin	0.09	0.07
12.	Zinc	0.08	0.06

As discussed in Section 15.2.7, upon agreement with the permitting authority, facilities with cyanide treatment have the option of achieving the limitation for either total or amenable cyanide. Upon agreement with the permitting authority, facilities must choose to monitor for TOP or TOC, or implement a management plan for organic chemicals as specified in Section 15.2.7. A POTW has the option of imposing mass-based standards in place of the concentration-based standards. To convert to mass-based standards, multiply each parameter's concentration-based standard by the average daily flow of process wastewater discharged by the source into the POTW.

14.6.5 PSNS for the Steel Forming and Finishing Subcategory

EPA expects that new facilities in the Steel Forming and Finishing Subcategory will discharge similar quantities of the same pollutants that existing sources discharge.

Therefore, the need for PSNS regulation is the same as the need for PSES regulation. (See Section 14.4.6.) Section 7 discusses the pass-through analysis for new sources.

EPA is proposing PSNS for this subcategory based on BAT Option 4 for the same reasons it is proposing this option for NSPS. In addition, EPA is not proposing a flow cutoff exclusion for PSNS for this subcategory for the same reasons that it did not propose a flow cutoff for PSES. (See Section 14.4.6.)

The Agency also strongly considered proposing PSNS based on ultrafiltration for oil and grease removal and chemical precipitation followed by sedimentation for TSS and metals removal. This option is equivalent to BAT Option 2 with the oil/water separator replaced by an ultrafilter.

The Agency determined that the cost of compliance with PSNS based on Option 4 would make up only 0.17 percent of a new facility's projected revenues and concluded that this would not create a barrier to entry.

EPA expresses the proposed effluent limitations guidelines and standards for BPT, BAT, NSPS, PSES, and PSNS for the Steel Forming and Finishing Subcategory as mass limitations in pounds/1,000 pounds of product. Permit writers and control authorities shall compute mass effluent limitations and pretreatment requirements for each forming/finishing operation by multiplying the average daily production rate (or other reasonable measure of production) by the respective effluent limitations guidelines or standards listed in Table 14-27. Production-normalized flows for the Steel Forming and Finishing Subcategory are listed in Table 14-7. Permit writers and control authorities shall not include production from unit operations that do not generate or discharge process wastewater in the calculation of the operating rate. These mass-based limitations apply to the operations listed and defined in Section 14.1.5

Table 14-27 lists the proposed PSNS effluent limitations for the Steel Forming and Finishing Subcategory. Section 10.0 describes EPA's data editing procedures and statistical methodology for calculating the proposed effluent limits for this subcategory. New indirect discharging facilities in the Steel Forming & Finishing Subcategory must achieve the following.

Table 14-27

PSNS for the Steel Forming and Finishing Subcategory

Pollutant	TSS		O&G (as HEM)	
Forming/Finishing Operation	Maximum Daily (lbs/1000 lbs of product)	Maximum Monthly Avg. (lbs/1000 lbs of product)	Maximum Daily (lbs/1000 lbs of product)	Maximum Monthly Avg. (lbs/1000 lbs of product)
(a) Acid Pickling	0.0571	0.0358	0.0312	0.0239

Pollutant	TSS		O&G (as HEM)	
Forming/Finishing Operation	Maximum Daily (lbs/1000 lbs of product)	Maximum Monthly Avg. (lbs/1000 lbs of product)	Maximum Daily (lbs/1000 lbs of product)	Maximum Monthly Avg. (lbs/1000 lbs of product)
(b) Alkaline Cleaning	0.0571	0.0358	0.0312	0.0239
(c) Cold Forming	0	0	0	0
(d) Continuous Annealing	0.00286	0.00179	0.00156	0.00120
(e) Electroplating	0.115	0.0716	0.0623	0.00478
(f) Hot Dip Coating	0.0166	0.0104	0.00903	0.00693
(g) Lubrication	0.00137	0.000859	0.000748	0.000574
(h) Mechanical Descaling	0.000229	0.000144	0.000125	0.0000956
(i) Painting	0.00743	0.00466	0.00405	0.00311
(j) Pressure Deformation	0.00286	0.00179	0.00156	0.00120

Pollutant	TOC		TOP	
Forming/Finishing Operation	Maximum Daily (lbs/1000 lbs of product)	Maximum Monthly Avg. (lbs/1000 lbs of product)	Maximum Daily (lbs/1000 lbs of product)	Maximum Monthly Avg. (lbs/1000 lbs of product)
(a) Acid Pickling	0.181	0.103	0.0188	0.00896
(b) Alkaline Cleaning	0.181	0.103	0.0188	0.00896
(c) Cold Forming	0	0	0	0
(d) Continuous Annealing	0.00901	0.00514	0.000937	0.000448
(e) Electroplating	0.361	0.206	0.0375	0.0180
(f) Hot Dip Coating	0.0523	0.0298	0.00543	0.00260
(g) Lubrication	0.00433	0.00247	0.000450	0.000215
(h) Mechanical Descaling	0.000721	0.000411	0.0000750	0.0000359
(i) Painting	0.0235	0.0134	0.00244	0.00117
(j) Pressure Deformation	0.00901	0.00514	0.000937	0.000448

Table 14-27 (Continued)

Pollutant	Cadmium		Chromium	
Forming/Finishing Operation	Maximum Daily (lbs/1000 lbs of product)	Maximum Monthly Avg. (lbs/1000 lbs of product)	Maximum Daily (lbs/1000 lbs of product)	Maximum Monthly Avg. (lbs/1000 lbs of product)
(a) Acid Pickling	0.0000267	0.0000184	0.000355	0.000143
(b) Alkaline Cleaning	0.0000267	0.0000184	0.000355	0.000143
(c) Cold Forming	0	0	0	0
(d) Continuous Annealing	0.00000133	0.00000092	0.0000178	0.00000714
(e) Electroplating	0.0000534	0.0000368	0.000710	0.000286
(f) Hot Dip Coating	0.00000773	0.00000533	0.000103	0.0000415
(g) Lubrication	0.00000064	0.00000044	0.00000851	0.00000343
(h) Mechanical Descaling	0.00000011	0.00000007	0.00000142	0.00000057
(i) Painting	0.00000347	0.00000239	0.0000461	0.0000186
(j) Pressure Deformation	0.00000133	0.00000092	0.0000178	0.00000714

Pollutant	Copper		Lead	
Forming/Finishing Operation	Maximum Daily (lbs/1000 lbs of product)	Maximum Monthly Avg. (lbs/1000 lbs of product)	Maximum Daily (lbs/1000 lbs of product)	Maximum Monthly Avg. (lbs/1000 lbs of product)
(a) Acid Pickling	0.000898	0.000327	0.0000692	0.0000517
(b) Alkaline Cleaning	0.000898	0.000327	0.0000692	0.0000517
(c) Cold Forming	0	0	0	0
(d) Continuous Annealing	0.0000449	0.0000164	0.00000346	0.00000258
(e) Electroplating	0.00180	0.000654	0.000139	0.000104
(f) Hot Dip Coating	0.000261	0.0000949	0.0000201	0.0000150
(g) Lubrication	0.0000216	0.00000785	0.00000166	0.00000124
(h) Mechanical Descaling	0.00000359	0.00000131	0.00000028	0.00000021
(i) Painting	0.000117	0.0000425	0.00000899	0.00000671
(j) Pressure Deformation	0.0000449	0.0000164	0.00000346	0.00000258

Table 14-27 (Continued)

Pollutant	Manganese		Molybdenum	
Forming/Finishing Operation	Maximum Daily (lbs/1000 lbs of product)	Maximum Monthly Avg. (lbs/1000 lbs of product)	Maximum Daily (lbs/1000 lbs of product)	Maximum Monthly Avg. (lbs/1000 lbs of product)
(a) Acid Pickling	0.000600	0.000364	0.00164	0.00103
(b) Alkaline Cleaning	0.000600	0.000364	0.00164	0.00103
(c) Cold Forming	0	0	0	0
(d) Continuous Annealing	0.0000300	0.0000182	0.0000820	0.0000511
(e) Electroplating	0.00120	0.000728	0.00328	0.00205
(f) Hot Dip Coating	0.000174	0.000106	0.000476	0.000297
(g) Lubrication	0.0000144	0.00000873	0.0000394	0.0000246
(h) Mechanical Descaling	0.00000240	0.00000146	0.00000656	0.00000409
(i) Painting	0.0000780	0.0000473	0.000214	0.000133
(j) Pressure Deformation	0.0000300	0.0000182	0.0000820	0.0000511

Pollutant	Nickel		Silver	
Forming/Finishing Operation	Maximum Daily (lbs/1000 lbs of product)	Maximum Monthly Avg. (lbs/1000 lbs of product)	Maximum Daily (lbs/1000 lbs of product)	Maximum Monthly Avg. (lbs/1000 lbs of product)
(a) Acid Pickling	0.00391	0.00156	0.0000955	0.0000582
(b) Alkaline Cleaning	0.00391	0.00156	0.0000955	0.0000582
(c) Cold Forming	0	0	0	0
(d) Continuous Annealing	0.000196	0.0000779	0.00000477	0.00000291
(e) Electroplating	0.00782	0.00312	0.000191	0.000117
(f) Hot Dip Coating	0.00114	0.000452	0.0000277	0.0000169
(g) Lubrication	0.0000939	0.0000374	0.00000229	0.00000140
(h) Mechanical Descaling	0.0000157	0.00000623	0.00000038	0.00000023
(i) Painting	0.000509	0.000203	0.0000125	0.00000756
(j) Pressure Deformation	0.000196	0.0000779	0.00000477	0.00000291

Table 14-27 (Continued)

Pollutant	Sulfide (as S)		Tin	
Forming/Finishing Operation	Maximum Daily (lbs/1000 lbs of product)	Maximum Monthly Avg. (lbs/1000 lbs of product)	Maximum Daily (lbs/1000 lbs of product)	Maximum Monthly Avg. (lbs/1000 lbs of product)
(a) Acid Pickling	0.0630	0.0267	0.0000606	0.0000453
(b) Alkaline Cleaning	0.0630	0.0267	0.0000606	0.0000453
(c) Cold Forming	0	0	0	0
(d) Continuous Annealing	0.00315	0.00134	0.00000303	0.00000226
(e) Electroplating	0.126	0.0534	0.000122	0.0000905
(f) Hot Dip Coating	0.0183	0.00774	0.0000176	0.0000132
(g) Lubrication	0.00151	0.000641	0.00000145	0.00000109
(h) Mechanical Descaling	0.000252	0.000107	0.00000024	0.00000018
(i) Painting	0.00818	0.00347	0.00000788	0.00000588
(j) Pressure Deformation	0.00315	0.00134	0.00000303	0.00000226

Pollutant	Zinc	
Forming/Finishing Operation	Maximum Daily (lbs/1000 lbs of product)	Maximum Monthly Avg. (lbs/1000 lbs of product)
(a) Acid Pickling	0.000163	0.000111
(b) Alkaline Cleaning	0.000163	0.000111
(c) Cold Forming	0	0
(d) Continuous Annealing	0.00000811	0.00000553
(e) Electroplating	0.000325	0.000222
(f) Hot Dip Coating	0.0000471	0.0000321
(g) Lubrication	0.00000389	0.00000265
(h) Mechanical Descaling	0.00000065	0.00000044
(i) Painting	0.0000211	0.0000144
(j) Pressure Deformation	0.00000811	0.00000553

As discussed in Section 15.2.7, upon agreement with the permitting authority, facilities with cyanide treatment have the option of achieving the limitation for either total or amenable cyanide. Upon agreement with the permitting authority, facilities must choose to

monitor for TOP or TOC, or implement a management plan for organic chemicals as specified in Section 15.2.7.

14.6.6 PSNS for the Oily Wastes Subcategory

EPA expects that new facilities in the Oily Wastes Subcategory will discharge similar quantities of the same pollutants that existing sources discharge. Therefore, the need for PSNS regulation is the same as the need for PSES regulation. (See Section 14.4.7.). Section 7 discusses the pass-through analysis for new sources.

EPA is proposing PSNS for this subcategory based on BAT Option 6 for the same reasons it is proposing this option for NSPS. In addition, EPA is proposing a 2 MGY flow cutoff exclusion for PSNS with serious consideration of a 3 MGY flow cutoff as well. This is the same flow cutoff level that EPA is proposing for PSES for the existing indirect discharging facilities in the Oily Wastes Subcategory. The Agency is proposing a 2 MGY flow cutoff is appropriate for new indirect discharging facilities in the Oily Wastes Subcategory based on the potential POTW permitting burden that would be associated with developing and then maintaining permits for new sources with low flows, and the likelihood that these facilities discharge a small amount of pound-equivalents at these low flow rates. The Agency assumes that the pound-equivalents per facility for new facilities with flows below or equal to 2 MGY would be even lower than the 2 pound-equivalents per facility for similarly sized existing sources in this subcategory. The Agency concluded that a similar (or even smaller) amount of pollutant removal is not justified by the cost of the regulation for new indirect oily waste facilities discharging less than or equal to 2 MGY.

Since EPA is proposing to set PSNS equal to PSES (Option 6) and this option is determined to be economically achievable for these facilities under PSES, the Agency concluded that this would not create a barrier to entry.

14.6.7 PSNS for the Railroad Line Maintenance Subcategory

EPA expects that new facilities in the Railroad Line Maintenance Subcategory will discharge similar quantities of the same pollutants that existing sources discharge. Therefore, EPA is proposing not to establish PSNS for this subcategory for the same reasons that it did not propose PSES. (See Section 14.4.8.)

14.6.8 PSNS for the Shipbuilding Dry Dock Subcategory

EPA expects that new facilities in the Shipbuilding Dry Dock Subcategory will discharge similar quantities of the same pollutants that existing sources discharge. Therefore, EPA is proposing not to establish PSNS for this subcategory for the same reasons that it did not propose PSES. (See Section 14.4.9.)

Appendix A

Pollution Prevention Alternative for the Metal Finishing Job Shops Subcategory

Introduction

The Agency is considering allowing indirect discharge facilities in the Metal Finishing Job Shops subcategory, with approval by their control authority (e.g., POTW), to demonstrate compliance with specified pollution prevention and water conservation practices (in addition to maintaining compliance with the existing Metal Finishing and Electroplating Effluent Guidelines or approved local water quality-based limits, whichever is more stringent) in lieu of meeting the requirements of the MP&M regulation. Facilities in the Metal Finishing Job Shops subcategory that do not wish to use the compliance alternative would need to meet the full requirements of the MP&M regulation as specified in today's proposed rule.

EPA has solicited comment on whether to allow all facilities in the Metal Finishing Job Shops subcategory to comply with the P2 Alternative or whether the P2 Alternative should only be available to facilities below a specified wastewater discharge volume. EPA has proposed low flow exclusions for indirect dischargers in the General Metals (1 MGY) and Oily Wastes (2 MGY) subcategories due to potential permitting burden on POTWs.

Background

The proposed pollution prevention alternative for the Metal Finishing Job Shops Subcategory grew out of the National Metal Finishing Strategic Goals Program ("SGP"). The SGP was developed out of EPA's sector based Common Sense Initiative. In 1994, EPA launched the CSI to promote "cleaner, cheaper, and smarter" environmental performance, using a non-adversarial, stakeholder consensus process to test innovative ideas and approaches. The SGP is a cooperative effort that involves all stakeholders (e.g., industry, regulators, environmental/citizen groups) to define a fundamentally different approach to environmental and public health protection by exploring a more flexible, cost-effective and environmentally protective solutions tailored to specific industry needs. The Metal Finishing SGP is a performance-based, voluntary program which includes commitments by the industry to meet multimedia environmental targets substantially reducing pollution from their operations beyond what is required by law. These goals will conserve water, energy and metals, and reduce hazardous emissions. The other stakeholders in this process (EPA, State and local regulators, and environmental/community groups) have also committed to working with the industry participants to help them meet their goals through compliance, technical, and financial assistance, removing regulatory and policy barriers, offering incentives, and an open dialogue as issues arise.

The SGP represents a long-term strategic vision for improved environmental protection by the entire metal finishing industry. The metal finishing industry's tangible commitment to work with the Agency lays the foundation for this pollution prevention (P2) compliance alternative.

Pollution Prevention Alternative Plan

The purpose of a pollution prevention compliance alternative ("P2 Alternative") is to reduce economic impacts on the facilities in the Metal Finishing Job Shops subcategory and to take into consideration the activities and achievements of this Common Sense Initiative ("CSI") sector to test innovative approaches to environmental protection, which has culminated in the National Metal Finishing Strategic Goals Program.

One way that EPA is considering to specify pollution prevention and water conservation practices, without stifling innovation and advances, is to require facilities to choose practices from a larger list (or menu) of categories of specified practices (see below). EPA is considering requiring practices in all ten categories. The following is an example of the format and potential pollution prevention practices that EPA is considering for incorporation into the final MP&M rule:

Category 1. Must Use Practices that Reduce and/or Recover Drag-Out
To satisfy this requirement, facilities must implement three or more drag-out reduction practices or use at least one drag-out recovery (i.e., chemical recovery) technology listed below on all electroplating or surface finishing lines.

Drag-out Reduction Practices

- Lower process solution viscosity and/or surface tension by lowering chemical concentration, increasing bath temperature, or use wetting agents.
- Reduce drag-out volume by modifying rack/barrel design and perform rack maintenance to avoid solution trapping under insulation.
- Position parts on racks in a manner that avoids trapping solution.
- Reduce speed of rack/barrel withdraw from process solution and/or increase dwell time over process tank.
- Rotate barrels over process tank to improve drainage.
- Use spray/fog rinsing over the process tank (limited applicability).
- Use drip boards and return process solution to the process tank.
- Use drag-out tanks, where applicable, and return solution to the process tank.
- Work with customers to ensure that part design maximizes drainage

Drag-out Recovery
Use a chemical recovery technology to recover drag-out from wastewater.

- Evaporators
- Ion exchange
- Electrowinning
- Electrodialysis
- Reverse osmosis

Category 2. Must Use Good Rinse System Design for Water Conservation
To satisfy this requirement, facilities must implement three or more elements of good rinse system design listed below on all electroplating or surface finishing lines:

- Select the minimum size rinse tank in which the parts can be rinsed and use the same size for the entire plating line, where practical.
- Locate the water inlet and discharge points of the tank at opposite positions in the tank to avoid short-circuiting or use a flow distributor to feed the rinse water evenly.
- Use air agitation, mechanical mixing or other means of turbulence.
- Use spray/fog rinsing (less effective with hidden surfaces).
- Use multiple rinse tanks in a counter-flow configuration (i.e., counter-current cascade rinsing).
- Reuse rinse water multiple times in different rinse tanks for succeeding less critical rinsing

Category 3. Must Use Water Flow Control for Water Conservation
To satisfy this requirement, facilities must implement at least one effective method of water use control on all electroplating or surface finishing lines. Effective water use controls include, but are not limited to:

- Flow restrictors (Flow restrictors as a stand alone method of rinse water control are only effective with plating lines that have constant production rates, such as automatic plating machines. For other operations, there must also be a mechanism or procedure for stopping water flow during idle periods.)
- Conductivity controls
- Timer rinse controls
- Production activated control (e.g., spray systems activated when a rack or barrel enters/exits a rinse station.)

Category 4. Must Segregate Non-Process Water from Process Water
To satisfy this requirement, facilities must not combine non-process water such as non-contact cooling water with process wastewater prior to wastewater treatment.

Category 5. Must Use Water Conservation Practices with Air Pollution Control Devices
To satisfy this requirement, facilities operating air pollution control devices with wet scrubbers must recirculate the scrubber water as appropriate (periodic blowdown is allowed, as needed). Where feasible, reuse scrubber water in process baths.

Category 6. Must Practice Good Housekeeping
To satisfy this requirement, facilities must demonstrate compliance with each of the requirements listed below:

- Perform preventative maintenance on all valves and fittings (i.e., check for leaks and damage) and repair leaky valves and fittings in a timely manner.
- Inspect tanks and liners and repair or replace equipment as necessary to prevent ruptures and leaks. Use tank and liner materials that are appropriate for associated process solutions.

- Perform quick cleanup of leaks and spills in chemical storage and process areas.
- Remove metal buildup from racks and fixtures.

Category 7. Minimize the Entry of Oil Into Rinse Systems
To satisfy this requirement, facilities must do at least one of the practices listed below:

- Minimize the entry of oil into cleaning baths or use oil skimmers or other oil removal devices in cleaning baths when needed to prevent oil from entering rinse tanks.
- Work with customers to degrease parts prior to shipment to the plating facility to minimize the amount of oils on incoming materials.

Category 8. Must Sweep or Vacuum Dry Production Areas Prior to Rinsing with Water
To satisfy this requirement, facilities must sweep or vacuum dry production area floors prior to rinsing with water.

Category 9. Must Reuse Drum/Shipping Container Rinsate Directly in Process Tanks
To satisfy this requirement, when performing rinsing of raw material drums, storage drums, and/or shipping containers that contain pollutants regulated under the MP&M regulation, facilities must reuse the rinsate directly into process tanks or save for use in future production.

Category 10. Must Implement Environmental Management and Record Keeping System
To satisfy this requirement, facilities must meet the requirements listed below:

- Implement an environmental management program that includes, but is not limited to, the following elements:
- pollution prevention policy statement,
- environmental performance goals,
- pollution prevention assessment,
- pollution prevention plan,
- environmental tracking and record keeping system,
- procedures to optimize control parameter settings (e.g., ORP set point in cyanide destruction systems, optimum pH for chemical precipitation systems, etc.), and
- statement delineating minimum training levels for wastewater treatment operators.

(EPA notes that it has developed a template for a metal finishing facility-specific Environmental Management System that is being used in conjunction with the SGP in EPA's Region 9 in California– see http://www.strategicgoals.org/tools/home.htm for information on this template).

The first two categories listed above involve practices and techniques for reducing drag-out. Drag-out is the film of chemical solution covering parts and fixtures as they exit process solutions. For many metal finishing operations, drag-out and the subsequent contamination of rinse waters is the major pollution control challenge. Reducing the formation of drag-out, minimizing the introduction of drag-out to rinse systems, and recovering drag-out are important pollution prevention measures. EPA believes that drag-out reduction and recovery may prevent a substantial pollutant loading of metals from being discharged to the POTW However, EPA did not have sufficient information on the pollutant reductions, capital costs, and operating and

maintenance costs associated with installation and operation of drag-out reduction and recovery technologies to include such equipment explicitly into the model that EPA uses to develop national estimates of compliance costs and pollutant reductions. Some aspects of drag-out reduction are captured in the flow rinse reduction modules of the cost and loadings model (see Section 11 for a detailed discussion of the cost and loadings model). Good rinse design can reduce contamination of rinse water as well as reduce the volume of fresh water needed to perform the necessary rinsing. It also reduces the volume of wastewater requiring treatment, which in turn reduces costs and the volume of wastewater treatment sludge requiring disposal. EPA specifically solicits data on the pollutant reductions, capital costs, and operating and maintenance costs associated with installation and operation of drag-out reduction and recovery technologies.

EPA is considering allowing facilities complying with the P2 Alternative to substitute another pollution prevention practice for one listed above provided that the facility provides adequate justification for the modification in a written request submitted to the control authority. Facility owners must certify compliance with the pollution prevention requirements twice per year and maintain records at the facility indicating how each category requirement has been satisfied. Facilities choosing the P2 Alternative would also need to agree to make the practices enforceable. Reporting would occur in conjunction with their twice annual periodic reports on continued compliance under the General Pretreatment Regulations (40 CFR 403.12(e)).

EPA has solicited comment on all aspects of the Pollution Prevention Alternative for the Metal Finishing Job Shops subcategory including the list of practices as well as the possible format for the alternative. More specifically, EPA requested comment on whether there are additional practices that should be listed, the costs of implementing this compliance alternative, the pollutant reduction associated with this alternative, and whether EPA should offer this alternative to other subcategories (even those not currently regulated by the Metal Finishing and Electroplating effluent guidelines). EPA also requested comments from local regulators on the implementation burden, the required documentation, and on the ability to enforce a P2 Alternative.